Online Resource to

Title: **On uniformly resolvable designs with block sizes 3 and 4**
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This Online Resource contains ingredient designs required for our constructions. These were found computationally.

Example A.1 An $\mathrm{LRPBD}_4(3; 6)$; each row forms a parallel class:
(1 5 6; 0 1 1), (2 3 4; 2 2 0),
(2 3 6; 2 2 0), (1 4 5; 0 2 2),
(2 4 5; 2 0 2), (1 3 6; 1 0 3),
(3 4 5; 1 2 1), (1 2 6; 3 0 1),
(1 3 5; 3 2 3), (2 4 6; 2 3 1),
(1 4 6; 3 3 0), (2 3 5; 3 0 1),
(4 5 6; 1 2 1), (1 2 3; 1 0 3),
(1 2 5; 2 3 1), (3 4 6; 2 3 1),
(3 5 6; 0 0 0), (1 2 4; 1 0 3),
(2 5 6; 3 3 0), (1 3 4; 2 3 1).

Example A.2 An $\mathrm{LRTD}_4(4, 2)$, $\boldsymbol{G} = \{\{1,2\}, \{3,4\}, \{5,6\}, \{7,8\}\}$; each row forms a parallel class:
(1 4 5 8; 0 1 2 1 2 1), (2 3 6 7; 1 0 2 3 1 2),
(1 3 5 7; 3 3 2 0 3 3), (2 4 6 8; 2 2 2 0 0 0),
(2 3 5 8; 0 1 1 1 1 0), (1 4 6 7; 3 0 1 1 2 1),
(1 4 5 7; 1 0 0 3 3 0), (2 3 6 8; 2 3 0 1 2 1),
(2 4 5 8; 0 0 3 0 3 3), (1 3 6 7; 1 3 3 2 2 0),
(2 4 6 7; 3 1 0 2 1 3), (1 3 5 8; 0 2 0 2 0 2),
(1 4 6 8; 2 1 3 3 1 2), (2 3 5 7; 3 2 3 3 0 1),
(1 3 6 8; 2 2 1 0 3 3), (2 4 5 7; 1 3 1 2 0 2).
Removing the points 7 and 8 with there labels gives an $\mathrm{LRTD}_4(3, 2)$.

Example A.3 An $\mathrm{LURD}_3(\{3, 4\}; 24)$ with $r_4 = 9$; each row forms a uniform parallel class:
(1 2 3; 2 2 0), (4 5 6; 0 2 2), (7 8 9; 0 2 2), (10 11 12; 0 2 2), (13 14 15; 1 1 0), (16 17 18; 2 1 2), (19 20 21; 2 1 2), (22 23 24; 2 1 2),
(1 17 23; 1 2 1), (2 18 24; 0 0 0), (3 19 21; 0 2 2), (4 20 22; 1 0 2), (5 9 13; 0 0 0), (6 10 14; 0 0 0), (7 11 15; 0 1 1), (8 12 16; 0 0 0),
(5 11 21; 0 2 2), (6 12 22; 2 2 0), (7 9 23; 0 0 0), (8 10 24; 0 1 1), (1 16 18; 2 2 0), (2 13 19; 1 0 2), (3 14 20; 2 0 1), (4 15 17; 0 1 1),
(5 14 17; 1 0 2), (6 15 18; 0 2 2), (7 16 19; 2 0 1), (8 13 20; 1 2 1), (1 9 21; 0 0 0), (2 10 22; 2 0 1), (3 11 23; 0 1 1), (4 12 24; 2 1 2),
(9 14 18; 2 0 1), (10 15 19; 0 1 1), (11 16 20; 0 2 2), (12 13 17; 2 2 0), (1 5 22; 0 0 0), (2 6 23; 0 0 0), (3 7 24; 2 1 2), (4 8 21; 0 0 0),
(1 10 20; 0 2 2), (2 11 17; 0 1 1), (3 12 18; 0 1 1), (4 9 19; 1 0 2), (5 16 23; 2 2 0), (6 13 24; 0 1 1), (7 14 21; 0 0 0), (8 15 22; 1 0 2),
(1 15 24; 0 0 0), (2 16 21; 0 1 1), (3 13 22; 1 0 2), (4 14 23; 0 2 2), (5 12 20; 1 0 2), (6 9 17; 2 1 2), (7 10 18; 0 1 1), (8 11 19; 0 1 1),
(13 18 21; 2 1 2), (14 19 22; 1 0 2), (15 20 23; 1 2 1), (16 17 24; 0 0 0), (1 7 12; 1 0 2), (2 8 9; 1 2 1), (3 5 10; 1 2 1), (4 6 11; 1 1 0),
(1 6 19; 1 1 0), (2 7 20; 2 1 2), (3 8 17; 0 0 0), (4 5 18; 1 2 1), (9 16 22; 1 0 2), (10 13 23; 0 1 1), (11 14 24; 1 0 2), (12 15 21; 0 1 1),
(9 20 24; 2 2 0), (10 17 21; 2 0 1), (11 18 22; 1 2 1), (12 19 23; 2 2 0), (1 8 14; 1 2 1), (2 5 15; 0 0 0), (3 6 16; 2 0 1), (4 7 13; 1 1 0),
(5 19 24; 1 0 2), (6 20 21; 2 0 1), (7 17 22; 0 2 2), (8 18 23; 0 2 2), (1 11 13; 0 0 0), (2 12 14; 2 0 1), (3 9 15; 1 1 0), (4 10 16; 2 2 0),
(1 3 19; 1 0 2), (2 4 20; 0 0 0), (5 21 23; 0 1 1), (6 22 24; 0 2 2), (7 11 15; 1 0 2), (8 12 16; 1 2 1), (9 13 17; 2 1 2), (10 14 18; 2 2 0),

(7 13 23; 2 1 2), (8 14 24; 0 0 0), (1 9 11; 2 1 2), (2 10 12; 0 0 0), (3 18 20; 0 2 2), (4 15 21; 2 2 0), (5 16 22; 1 1 0), (6 17 19; 0 1 1),
(7 16 19; 0 2 2), (8 17 20; 2 0 1), (9 18 21; 1 1 0), (10 15 22; 1 2 1), (3 11 23; 1 0 2), (4 12 24; 0 0 0), (1 5 13; 1 2 1), (2 6 14; 1 2 1),
(11 16 20; 1 1 0), (12 17 21; 0 2 2), (13 18 22; 0 0 0), (14 15 19; 1 0 2), (3 7 24; 1 2 1), (1 4 8; 1 0 2), (2 5 9; 1 0 2), (6 10 23; 1 1 0),
(3 12 22; 1 2 1), (4 13 19; 2 2 0), (5 14 20; 2 1 2), (6 11 21; 2 2 0), (1 7 18; 2 1 2), (2 8 15; 0 2 2), (9 16 23; 0 2 2), (10 17 24; 1 0 2),
(2 3 17; 1 2 1), (4 18 23; 0 0 0), (5 15 24; 1 2 1), (1 6 16; 2 1 2), (7 14 22; 1 0 2), (8 11 19; 2 2 0), (9 12 20; 2 0 1), (10 13 21; 1 1 0),
(15 20 23; 2 1 2), (16 21 24; 2 1 2), (1 17 22; 0 1 1), (2 18 19; 2 2 0), (3 9 14; 2 0 1), (4 10 11; 0 2 2), (5 7 12; 0 0 0), (6 8 13; 2 1 2),
(3 8 21; 2 1 2), (4 9 22; 2 1 2), (5 10 19; 0 2 2), (6 7 20; 1 1 0), (11 18 24; 0 1 1), (1 12 15; 2 1 2), (2 13 16; 2 2 0), (14 17 23; 0 0 0),
(2 11 22; 1 2 1), (12 19 23; 0 1 1), (13 20 24; 2 0 1), (1 14 21; 1 2 1), (3 10 16; 1 2 1), (4 7 17; 2 0 1), (5 8 18; 0 2 2), (6 9 15; 0 1 1),
(2 7 21; 0 2 2), (8 22 23; 2 0 1), (9 19 24; 1 1 0), (1 10 20; 1 1 0), (3 13 15; 0 0 0), (4 14 16; 2 0 1), (5 11 17; 2 2 0), (6 12 18; 0 0 0),
(7 15 16 23; 2 1 2 2 0 1), (8 13 17 24; 0 1 2 1 2 1), (9 14 18 22; 0 2 1 2 1 2), (1 5 12 19; 2 1 2 2 0 1), (2 6 10 20; 2 1 2 2 0 1), (3 4 11 21; 2 2 0 0 1 1),
(1 8 20 23; 2 0 0 1 1 0), (2 9 21 24; 1 0 1 2 0 1), (3 7 19 22; 0 1 1 1 1 0), (4 10 13 18; 1 0 1 2 0 1), (5 11 14 16; 1 0 0 2 2 0), (6 12 15 17; 1 2 2 1 1 0),
(1 7 11 13; 0 2 1 2 1 2), (2 8 12 14; 2 1 1 2 2 0), (3 9 10 15; 0 0 2 0 2 2), (4 16 20 22; 1 2 2 1 1 0), (5 17 21 23; 1 1 0 0 2 2), (6 18 19 24; 1 2 0 1 2 1),
(1 6 9 16; 0 1 0 1 0 2), (2 4 7 17; 1 1 0 0 2 2), (3 5 8 18; 2 1 2 2 0 1), (10 14 19 23; 1 0 2 2 1 2), (11 15 20 24; 0 0 2 0 2 2), (12 13 21 22; 1 0 2 2 1 2),
(1 10 17 22; 2 2 2 0 0 0), (2 11 18 23; 2 1 2 2 0 1), (3 12 16 24; 2 1 0 2 1 2), (4 8 15 19; 1 1 1 0 0 0), (5 9 13 20; 1 2 2 1 1 0), (6 7 14 21; 0 2 1 2 1 2),
(1 15 18 21; 2 0 1 1 2 1), (2 13 16 19; 0 1 1 1 1 0), (3 14 17 20; 1 2 1 1 0 2), (4 9 12 23; 0 1 1 1 1 0), (5 7 10 24; 1 2 1 1 0 2), (6 8 11 22; 0 1 1 1 1 0),
(1 4 14 24; 2 0 1 1 2 1), (2 5 15 22; 2 1 1 2 2 0), (3 6 13 23; 0 2 2 2 2 0), (7 12 18 20; 1 0 1 2 0 1), (8 10 16 21; 2 1 1 2 2 0), (9 11 17 19; 1 0 0 2 2 0),
(1 2 3 4; 1 0 0 2 2 0), (5 6 7 8; 0 2 1 2 1 2), (9 10 11 12; 2 0 0 1 1 0), (13 14 15 16; 0 2 2 2 2 0), (17 18 19 20; 0 2 0 2 0 1), (21 22 23 24; 0 0 0 0 0 0),
(3 4 5 6; 1 0 1 2 0 1), (7 8 9 10; 1 1 2 0 1 1), (11 12 13 14; 1 1 0 0 2 2), (15 16 17 18; 1 2 0 1 2 1), (19 20 21 22; 0 0 1 0 1 1), (1 2 23 24; 0 1 2 1 2 1).

Example A.4 A $\{3, 4\}$-LRGDD$_5$ of type 3^8 with $r_4 = 9$,
$\boldsymbol{G} = \{\{1,2,3\},\{4,5,6\},\{7,8,9\},\{10,11,12\},\{13,14,15\},\{16,17,18\},\{19,20,21\},\{22,23,24\}\}$;
each row forms a uniform parallel class:

(1 6 7; 2 1 4), (4 21 24; 0 0 0), (2 10 13; 4 3 4), (3 19 22; 1 0 4), (5 11 16; 4 1 2), (12 20 23; 1 0 4), (8 15 18; 3 0 2), (9 14 17; 4 3 4),
(1 5 10; 4 2 3), (3 4 12; 2 4 2), (2 9 24; 2 3 1), (7 18 19; 2 1 4), (11 14 22; 2 0 3), (8 13 20; 4 0 1), (6 17 23; 1 4 3), (15 16 21; 0 3 3),
(1 12 13; 4 2 3), (4 7 11; 0 4 4), (2 8 17; 3 2 4), (10 18 24; 3 2 4), (3 9 21; 4 1 2), (5 19 23; 3 4 1), (6 15 22; 2 0 3), (14 16 20; 1 4 3),
(1 15 23; 2 4 2), (4 17 20; 3 0 2), (2 12 16; 0 1 1), (3 5 7; 4 3 4), (10 21 22; 1 2 1), (8 11 24; 3 3 0), (9 13 19; 3 4 1), (6 14 18; 4 0 1),
(1 20 24; 4 1 2), (4 10 16; 2 0 3), (2 18 23; 4 2 3), (7 17 21; 0 3 3), (3 6 13; 4 1 2), (9 11 15; 3 1 3), (5 8 22; 3 0 2), (12 14 19; 3 1 3),
(1 18 21; 3 0 2), (4 9 23; 0 3 3), (2 6 11; 0 3 3), (7 13 16; 4 1 2), (8 10 19; 2 0 3), (3 14 24; 3 4 1), (5 15 20; 3 0 2), (12 17 22; 0 4 4),
(1 7 13; 4 1 2), (4 16 19; 2 4 2), (5 8 15; 1 2 1), (3 6 10; 3 0 2), (2 21 23; 0 1 1), (9 11 22; 0 4 4), (14 17 24; 2 2 0), (12 18 20; 4 3 4),
(1 5 19; 1 2 1), (4 12 14; 0 0 0), (2 7 10; 0 0 0), (13 17 20; 4 0 1), (6 16 22; 1 2 1), (3 18 24; 0 2 2), (8 11 21; 2 0 3), (9 15 23; 2 1 4),
(1 10 16; 4 0 1), (3 4 13; 1 0 4), (7 12 15; 2 2 0), (5 11 17; 0 3 3), (6 20 23; 0 2 2), (2 8 24; 0 0 0), (9 18 19; 3 1 3), (14 21 22; 4 2 3),
(1 18 21; 1 4 3), (4 9 24; 1 3 2), (3 7 22; 2 2 0), (5 13 16; 3 2 4), (10 14 20; 4 4 0), (6 8 12; 0 4 4), (2 15 17; 1 4 3), (11 19 23; 3 1 3),
(1 12 24; 1 0 4), (4 10 22; 1 2 1), (7 11 18; 3 1 3), (5 9 14; 4 4 0), (2 13 19; 4 4 0), (6 15 21; 4 4 0), (8 16 20; 4 1 2), (3 17 23; 3 4 1),
(1 11 14; 4 3 4), (4 15 18; 1 2 1), (6 7 19; 3 3 0), (2 5 22; 0 1 1), (8 10 17; 1 1 0), (12 13 23; 0 1 1), (16 21 24; 4 0 1), (3 9 20; 1 4 3),
(9 13 20; 1 4 3), (12 16 23; 3 2 4), (3 14 19; 2 4 2), (6 17 22; 0 3 3), (1 5 24; 2 3 1), (4 8 15; 0 0 0), (7 11 18; 0 4 4), (2 10 21; 1 3 2),
(2 13 18; 0 0 0), (5 16 21; 3 4 1), (8 19 24; 2 1 4), (11 15 22; 2 2 0), (1 9 14; 2 0 3), (4 12 17; 3 4 1), (3 7 20; 0 1 1), (6 10 23; 0 0 0),
(5 14 18; 1 0 4), (8 17 21; 2 3 1), (11 20 24; 1 4 3), (2 15 23; 4 4 0), (1 12 13; 2 3 1), (3 4 16; 3 2 4), (6 7 19; 1 0 4), (9 10 22; 4 2 3),
(1 11 17; 3 3 0), (2 4 20; 4 1 2), (5 7 23; 1 3 2), (8 10 14; 3 0 2), (3 13 24; 4 0 1), (6 15 16; 3 2 4), (9 18 19; 4 0 1), (12 21 22; 2 2 0),
(1 6 21; 1 1 0), (4 9 24; 2 1 4), (7 12 15; 3 1 3), (3 10 18; 2 3 1), (11 13 23; 4 4 0), (2 14 16; 3 3 0), (5 17 19; 2 4 2), (8 20 22; 2 3 1),
(5 9 15; 1 0 4), (8 12 18; 3 3 0), (3 11 21; 3 0 2), (2 6 24; 3 4 1), (1 19 23; 3 0 2), (4 14 22; 2 1 4), (7 13 17; 0 2 2), (10 16 20; 0 1 1),
(1 8 16; 1 2 1), (4 11 19; 3 2 4), (2 7 22; 4 3 4), (5 10 13; 0 2 2), (12 14 24; 4 3 4), (3 15 17; 2 1 4), (6 18 20; 3 3 0), (9 21 23; 4 4 0),
(6 11 14; 1 1 0), (2 9 17; 4 1 2), (5 12 20; 3 2 4), (3 8 23; 3 3 0), (1 18 22; 0 1 1), (4 13 21; 2 2 0), (7 16 24; 4 0 1), (10 15 19; 2 1 4),
(6 8 13; 1 1 0), (9 11 16; 4 0 1), (2 12 19; 3 3 0), (3 5 22; 0 3 3), (1 15 20; 0 0 0), (4 18 23; 4 1 2), (7 14 21; 4 4 0), (10 17 24; 2 3 1),
(12 13 18; 4 1 2), (3 16 21; 3 3 0), (6 19 24; 1 4 3), (9 15 22; 0 1 1), (1 11 14; 1 4 3), (2 4 17; 2 3 1), (5 7 20; 0 4 4), (8 10 23; 0 4 4),
(7 14 24; 0 3 3), (10 15 17; 0 1 1), (1 18 20; 4 1 2), (4 21 23; 3 0 2), (3 8 13; 1 2 1), (6 11 16; 4 3 4), (2 9 19; 3 0 2), (5 12 22; 4 2 3),
(2 12 14; 4 1 2), (3 5 17; 2 2 0), (6 8 20; 3 2 4), (9 11 23; 2 0 3), (1 13 24; 4 2 3), (4 15 16; 2 3 1), (7 18 19; 3 3 0), (10 21 22; 0 4 4),
(4 9 13; 4 3 4), (7 12 16; 0 0 0), (3 10 19; 3 2 4), (1 6 22; 4 3 4), (8 14 18; 1 1 0), (11 17 21; 2 4 2), (2 20 24; 2 2 0), (5 15 23; 4 2 3),
(5 13 21; 0 3 3), (8 16 24; 3 2 4), (11 15 19; 4 0 1), (2 18 22; 3 2 4), (9 10 14; 0 1 1), (1 12 17; 0 2 2), (3 4 20; 4 3 4), (6 7 23; 0 3 3),
(3 11 24; 2 3 1), (2 6 15; 4 0 1), (5 9 18; 2 3 1), (8 12 21; 0 1 1), (10 13 20; 1 3 2), (1 16 23; 1 1 0), (4 14 19; 3 3 0), (7 17 22; 4 1 2),
(6 13 17; 4 4 0), (9 16 20; 2 2 0), (12 19 23; 4 3 4), (3 14 22; 0 1 1), (1 8 15; 2 4 2), (4 11 18; 0 0 0), (2 7 21; 1 2 1), (5 10 24; 1 0 4),
(1 9 21; 4 2 3), (4 12 24; 1 2 1), (3 7 15; 1 4 3), (6 10 18; 3 2 4), (2 13 23; 1 0 4), (5 14 16; 2 4 2), (8 17 19; 3 4 1), (11 20 22; 3 3 0),
(6 14 21; 0 3 3), (9 17 24; 1 3 2), (12 15 20; 2 0 3), (3 18 23; 1 1 0), (7 11 13; 1 1 0), (2 10 16; 3 2 4), (1 5 19; 0 0 0), (4 8 22; 3 4 1),
(9 11 13; 1 2 1), (2 12 16; 1 0 4), (3 5 19; 3 0 2), (6 8 22; 2 1 4), (1 18 20; 2 3 1), (4 21 23; 1 4 3), (7 14 24; 2 2 0), (10 15 17; 1 3 2),
(3 20 24; 2 1 4), (6 15 23; 0 1 1), (9 14 18; 2 0 3), (12 17 21; 3 3 0), (2 10 13; 2 2 0), (1 5 16; 3 3 0), (4 8 19; 2 0 3), (7 11 22; 2 3 1),
(4 11 20; 1 3 2), (2 7 23; 2 3 1), (5 10 14; 2 0 3), (1 8 17; 4 4 0), (3 13 18; 3 4 1), (6 16 21; 0 2 2), (9 19 24; 3 0 2), (12 15 22; 4 1 2),
(2 4 18; 1 2 1), (5 7 21; 2 2 0), (8 10 24; 4 4 0), (1 11 15; 2 3 1), (6 13 20; 0 4 4), (9 16 23; 1 2 1), (12 14 19; 1 2 1), (3 17 22; 4 4 0),
(8 13 21; 2 4 2), (11 16 24; 0 2 2), (2 15 19; 2 2 0), (5 18 22; 4 4 0), (9 10 20; 1 1 0), (1 12 23; 3 2 4), (3 4 14; 0 1 1), (6 7 17; 2 3 1),
(7 12 13; 1 3 2), (3 10 16; 4 1 2), (1 6 19; 0 4 4), (4 9 22; 3 3 0), (8 15 20; 4 3 4), (11 18 23; 1 2 1), (2 14 21; 0 1 1), (5 17 24; 1 4 3),
(5 13 23; 4 1 2), (8 14 16; 4 2 3), (11 17 19; 4 2 3), (2 20 22; 0 4 4), (6 10 18; 1 1 0), (1 9 21; 3 3 0), (4 12 24; 4 4 0), (3 7 15; 4 3 4),
(8 12 18; 1 4 3), (3 11 21; 4 4 0), (2 6 24; 1 1 0), (5 9 15; 3 1 3), (4 13 17; 1 2 1), (7 16 20; 3 2 4), (10 19 23; 2 2 0), (1 14 22; 2 2 0),
(5 12 20; 1 3 2), (3 8 23; 4 0 1), (6 11 14; 2 3 1), (2 9 17; 1 0 4), (1 13 24; 0 4 4), (4 15 16; 4 1 2), (7 18 19; 0 2 2), (10 21 22; 3 0 2),
(1 4 8 14; 2 3 1 1 4 3), (2 7 20 22; 3 3 0 0 2 2), (3 10 15 17; 1 0 0 4 4 0), (11 13 21 23; 2 1 0 4 3 4), (5 9 12 18; 0 0 2 0 2 2), (6 16 19 24; 4 2 2 3 3 0),
(1 11 17 19; 0 1 1 1 1 0), (4 13 18 22; 0 3 0 3 0 2), (2 5 14 21; 4 2 4 3 0 2), (7 12 15 24; 4 0 1 1 2 1), (6 9 10 20; 1 4 1 3 0 2), (3 8 16 23; 0 0 2 0 2 2),
(1 9 16 22; 1 4 4 3 3 0), (2 4 15 19; 0 3 1 3 1 3), (7 10 14 23; 1 1 4 0 3 3), (3 11 18 20; 0 2 0 2 0 3), (5 13 17 24; 1 4 3 3 2 4), (6 8 12 21; 4 1 1 2 2 0),
(1 4 8 23; 1 0 3 4 2 3), (5 7 20 24; 3 1 2 3 4 1), (9 10 13 21; 2 0 1 3 4 1), (2 6 14 18; 2 4 1 2 4 2), (3 11 15 16; 1 1 4 0 3 3), (12 17 19 22; 4 3 0 4 1 2),
(1 6 9 17; 3 0 0 2 2 0), (2 4 11 20; 3 0 4 2 1 4), (7 14 16 23; 3 2 0 4 2 3), (3 5 12 21; 1 3 2 2 1 4), (10 15 19 24; 3 0 1 2 3 1), (8 13 18 22; 3 2 0 4 2 3),
(1 15 20 22; 1 2 0 1 4 3), (4 7 17 21; 2 0 4 3 2 4), (5 10 18 23; 4 1 0 2 1 4), (6 11 13 24; 0 3 3 3 3 0), (2 9 12 16; 0 2 4 2 4 2), (3 8 14 19; 2 4 3 2 1 4),
(1 4 7 10; 0 3 0 3 0 2), (13 16 19 22; 0 4 4 4 4 0), (14 17 20 23; 3 2 0 4 2 3), (15 18 21 24; 4 4 2 0 3 3), (2 5 8 11; 2 4 4 2 2 0), (3 6 9 12; 1 0 1 4 0 1),
(13 16 19 22; 1 2 3 1 2 1), (14 17 20 23; 1 1 1 0 0 0), (1 4 7 10; 4 0 3 1 4 3), (2 5 8 11; 1 1 2 0 1 1), (3 6 9 12; 0 3 2 3 2 4), (15 18 21 24; 0 1 0 1 0 4),
(13 16 19 22; 3 3 1 0 3 3), (14 17 20 23; 0 3 4 3 4 1), (15 18 21 24; 3 2 4 4 1 2), (1 4 7 10; 3 2 1 4 3 4), (2 5 8 11; 3 2 1 4 3 4), (3 6 9 12; 2 2 0 0 3 3).

Example A.5 A $\{3, 4\}$-LRGDD$_2$ of type 3^4 with $r_3 = 3$ and $r_4 = 4$,
$\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}\}$; each row forms a uniform parallel class:

(1 7 10; 0 1 1), (3 6 9; 1 1 0), (2 5 12; 1 1 0), (4 8 11; 0 0 0),
(5 9 10; 0 0 0), (2 4 7; 1 1 0), (1 6 11; 0 1 1), (3 8 12; 1 0 1),
(2 9 11; 0 1 1), (1 5 8; 1 0 1), (6 7 12; 0 0 0), (3 4 10; 1 1 0),
(1 4 9 11; 1 0 0 1 1 0), (2 6 8 12; 1 0 0 1 1 0), (3 5 7 10; 1 0 0 1 1 0),
(2 5 7 11; 0 0 0 0 0 0), (3 4 9 12; 0 0 1 0 1 1), (1 6 8 10; 1 1 0 0 1 1),
(2 6 9 10; 0 1 0 1 0 1), (1 4 7 12; 0 1 0 1 0 1), (3 5 8 11; 0 0 1 0 1 1),
(1 5 9 12; 0 1 1 1 1 0), (2 4 8 10; 0 1 1 1 1 0), (3 6 7 11; 0 1 0 1 0 1).

Below some designs, which are constructed with help of difference families. These are found computationally.

Example A.6 There exists a $\text{URD}(\{3, 4\}; 60)$ with $r_4 = 7$.

Proof Let Z_λ be the group of residues modulo λ. The design is constructed on $X = Z_4 \times Z_{15}$. Take the following seven parallel classes with blocks of size 4:

$P_1 = \{(0,0), (1,0), (2,0), (3,0)\} \; (\text{mod}(-,15))$

$P_2 = \{(0,0), (1,1), (2,2), (3,3)\} \; (\text{mod}(-,15))$

$P_3 = \{(0,3), (1,2), (2,1), (3,0)\} \; (\text{mod}(-,15))$

$P_4 = \{(0,0), (1,2), (2,4), (3,6)\} \; (\text{mod}(-,15))$

$P_5 = \{(0,6), (1,4), (2,2), (3,0)\} \; (\text{mod}(-,15))$

$P_6 = \{(0,0), (1,3), (2,6), (3,10)\} \; (\text{mod}(-,15))$

$P_7 = \{(0,10), (1,6), (2,3), (3,0)\} \; (\text{mod}(-,15))$

It is well known that there is an $\text{RPBD}(3; 15)$ with seven parallel classes. Place a copy of this design on each Z_{15} set. Denote the resolution classes by $R_{i,j}$ where $i \in Z_4$ denotes on which copy of Z_{15} the parallel class is placed and $j = 1,...,7$ are the resolution classes. The parallel classes of the triples are formed as follows:

{(0,0),(1,8),(2, 1)} (mod(-,15)) $\cup R_{3,1}$
{(0,0),(1,9),(2, 5)} (mod(-,15)) $\cup R_{3,2}$
{(0,0),(1,7),(2,12)} (mod(-,15)) $\cup R_{3,3}$
{(0,0),(1,4),(2,10)} (mod(-,15)) $\cup R_{3,4}$

{(0,0),(1,10),(3,13)} (mod(-,15)) $\cup R_{2,1}$
{(0,0),(1, 6),(3,14)} (mod(-,15)) $\cup R_{2,2}$
{(0,0),(1, 5),(3,11)} (mod(-,15)) $\cup R_{2,3}$
{(0,0),(1,12),(3, 7)} (mod(-,15)) $\cup R_{2,4}$

{(0,0),(2,14),(3,2)} (mod(-,15)) $\cup R_{1,1}$
{(0,0),(2, 7),(3,1)} (mod(-,15)) $\cup R_{1,2}$
{(0,0),(2, 9),(3,4)} (mod(-,15)) $\cup R_{1,3}$
{(0,0),(2, 3),(3,8)} (mod(-,15)) $\cup R_{1,4}$

{(1,0),(2, 4),(3,12)} (mod(-,15)) $\cup R_{0,1}$
{(1,0),(2, 7),(3,14)} (mod(-,15)) $\cup R_{0,2}$
{(1,0),(2,10),(3, 1)} (mod(-,15)) $\cup R_{0,3}$
{(1,0),(2, 9),(3, 5)} (mod(-,15)) $\cup R_{0,4}$.

The last three parallel classes of triples are given by $\bigcup_{i=0}^{3} R_{i,5}$, $\bigcup_{i=0}^{3} R_{i,6}$ and $\bigcup_{i=0}^{3} R_{i,7}$.

Example A.7 There exists a $\text{URD}(\{3, 4\}; 60)$ with $r_4 = 9$.

Proof Let Z_λ be the group of residues modulo λ. The design is constructed on $X = Z_4 \times Z_{15}$. Take the following nine parallel classes with blocks of size 4:

$P_1 = \{(0,0), (1,0), (2,0), (3,0)\} \pmod{(-,15)}$
$P_2 = \{(0,0), (1,1), (2,2), (3,3)\} \pmod{(-,15)}$
$P_3 = \{(0,3), (1,2), (2,1), (3,0)\} \pmod{(-,15)}$
$P_4 = \{(0,0), (1,2), (2,4), (3,6)\} \pmod{(-,15)}$
$P_5 = \{(0,6), (1,4), (2,2), (3,0)\} \pmod{(-,15)}$
$P_6 = \{(0,0), (1,3), (2,6), (3,10)\} \pmod{(-,15)}$
$P_7 = \{(0,10), (1,7), (2,4), (3,0)\} \pmod{(-,15)}$
$P_8 = \{(0,0), (1,4), (2,8), (3,13)\} \pmod{(-,15)}$
$P_9 = \{(0,13), (1,9), (2,5), (3,0)\} \pmod{(-,15)}$

It is well known that there is an $\mathrm{RPBD}(3;15)$ with seven parallel classes. Place a copy of this design on each Z_{15} set. Denote the resolution classes by $R_{i,j}$ where $i \in Z_4$ denotes on which copy of Z_{15} the parallel class is placed and $j = 1,...,7$ are the resolution classes. The parallel classes of the triples are formed as follows:

$\{(0,0),(1,7),(2,12)\} \pmod{(-,15)} \cup R_{3,1}$
$\{(0,0),(1,5),(2,14)\} \pmod{(-,15)} \cup R_{3,2}$
$\{(0,0),(1,8),(2,1)\} \pmod{(-,15)} \cup R_{3,3}$

$\{(0,0),(1,10),(3,7)\} \pmod{(-,15)} \cup R_{2,1}$
$\{(0,0),(1,9),(3,14)\} \pmod{(-,15)} \cup R_{2,2}$
$\{(0,0),(1,6),(3,1)\} \pmod{(-,15)} \cup R_{2,3}$

$\{(0,0),(2,10),(3,4)\} \pmod{(-,15)} \cup R_{1,1}$
$\{(0,0),(2,5),(3,8)\} \pmod{(-,15)} \cup R_{1,2}$
$\{(0,0),(2,3),(3,11)\} \pmod{(-,15)} \cup R_{1,3}$

$\{(1,0),(2,7),(3,14)\} \pmod{(-,15)} \cup R_{0,1}$
$\{(1,0),(2,6),(3,3)\} \pmod{(-,15)} \cup R_{0,2}$
$\{(1,0),(2,10),(3,1)\} \pmod{(-,15)} \cup R_{0,3}$.

The last four parallel classes of triples are given by $\bigcup_{i=0}^{3} R_{i,4}, \bigcup_{i=0}^{3} R_{i,5}, \bigcup_{i=0}^{3} R_{i,6}$ and $\bigcup_{i=0}^{3} R_{i,7}$.

Example A.8 There exists a $\mathrm{URD}(\{3,4\};132)$ with $r_4 = 7$.

Proof Let Z_λ be the group of residues modulo λ . The design is constructed on $X = Z_4 \times Z_{33}$. Take the following seven parallel classes with blocks of size 4:

$P_1 = \{(0,0), (1,0), (2,0), (3,0)\} \pmod{(-,33)}$
$P_2 = \{(0,0), (1,1), (2,2), (3,3)\} \pmod{(-,33)}$
$P_3 = \{(0,3), (1,2), (2,1), (3,0)\} \pmod{(-,33)}$
$P_4 = \{(0,0), (1,2), (2,4), (3,6)\} \pmod{(-,33)}$
$P_5 = \{(0,6), (1,4), (2,2), (3,0)\} \pmod{(-,33)}$
$P_6 = \{(0,0), (1,3), (2,6), (3,9)\} \pmod{(-,33)}$
$P_7 = \{(0,9), (1,6), (2,3), (3,0)\} \pmod{(-,33)}$

It is well known that there exists an RPBD(3; 33) with 16 parallel classes. Place a copy of this design on each Z_{33} set. Denote the resolution classes by $R_{i,j}$ where $i \in Z_4$ denotes on which copy of Z_{33} the parallel class is placed and $j = 1,...,16$ are the resolution classes. The parallel classes of the triples are formed as follows:

{(0,0),(1,5),(2,30)} (mod(-,33)) $\cup R_{3,1}$
{(0,0),(1,22),(2,32)} (mod(-,33)) $\cup R_{3,2}$
{(0,0),(1,27),(2,12)} (mod(-,33)) $\cup R_{3,3}$
{(0,0),(1,11),(2,18)} (mod(-,33)) $\cup R_{3,4}$
{(0,0),(1,25),(2,3)} (mod(-,33)) $\cup R_{3,5}$
{(0,0),(1,15),(2,10)} (mod(-,33)) $\cup R_{3,6}$
{(0,0),(1,13),(2,22)} (mod(-,33)) $\cup R_{3,7}$
{(0,0),(1,20),(2,26)} (mod(-,33)) $\cup R_{3,8}$
{(0,0),(1,18),(2,1)} (mod(-,33)) $\cup R_{3,9}$
{(0,0),(1,7),(2,24)} (mod(-,33)) $\cup R_{3,10}$
{(0,0),(1,8),(2,23)} (mod(-,33)) $\cup R_{3,11}$
{(0,0),(1,21),(2,14)} (mod(-,33)) $\cup R_{3,12}$
{(0,0),(1,17),(2,5)} (mod(-,33)) $\cup R_{3,13}$

{(0,0),(1,6),(3,29)} (mod(-,33)) $\cup R_{2,1}$
{(0,0),(1,23),(3,20)} (mod(-,33)) $\cup R_{2,2}$
{(0,0),(1,26),(3,18)} (mod(-,33)) $\cup R_{2,3}$
{(0,0),(1,12),(3,17)} (mod(-,33)) $\cup R_{2,4}$
{(0,0),(1,16),(3,4)} (mod(-,33)) $\cup R_{2,5}$
{(0,0),(1,19),(3,31)} (mod(-,33)) $\cup R_{2,6}$
{(0,0),(1,28),(3,15)} (mod(-,33)) $\cup R_{2,7}$
{(0,0),(1,29),(3,11)} (mod(-,33)) $\cup R_{2,8}$
{(0,0),(1,24),(3,13)} (mod(-,33)) $\cup R_{2,9}$
{(0,0),(1,9),(3,23)} (mod(-,33)) $\cup R_{2,10}$
{(0,0),(1,14),(3,7)} (mod(-,33)) $\cup R_{2,11}$
{(0,0),(1,4),(3,28)} (mod(-,33)) $\cup R_{2,12}$
{(0,0),(1,10),(3,26)} (mod(-,33)) $\cup R_{2,13}$

{(0,0),(2,28),(3,10)} (mod(-,33)) $\cup R_{1,1}$
{(0,0),(2,9),(3,25)} (mod(-,33)) $\cup R_{1,2}$
{(0,0),(2,19),(3,12)} (mod(-,33)) $\cup R_{1,3}$
{(0,0),(2,20),(3,16)} (mod(-,33)) $\cup R_{1,4}$
{(0,0),(2,11),(3,5)} (mod(-,33)) $\cup R_{1,5}$
{(0,0),(2,7),(3,19)} (mod(-,33)) $\cup R_{1,6}$
{(0,0),(2,21),(3,32)} (mod(-,33)) $\cup R_{1,7}$
{(0,0),(2,13),(3,1)} (mod(-,33)) $\cup R_{1,8}$
{(0,0),(2,15),(3,22)} (mod(-,33)) $\cup R_{1,9}$
{(0,0),(2,25),(3,2)} (mod(-,33)) $\cup R_{1,10}$
{(0,0),(2,17),(3,21)} (mod(-,33)) $\cup R_{1,11}$
{(0,0),(2,16),(3,8)} (mod(-,33)) $\cup R_{1,12}$
{(0,0),(2,8),(3,14)} (mod(-,33)) $\cup R_{1,13}$

{(1,0),(2,22),(3,13)} (mod(-,33)) $\cup R_{0,1}$
{(1,0),(2,23),(3,3)} (mod(-,33)) $\cup R_{0,2}$
{(1,0),(2,8),(3,17)} (mod(-,33)) $\cup R_{0,3}$
{(1,0),(2,27),(3,11)} (mod(-,33)) $\cup R_{0,4}$
{(1,0),(2,12),(3,7)} (mod(-,33)) $\cup R_{0,5}$
{(1,0),(2,5),(3,10)} (mod(-,33)) $\cup R_{0,6}$
{(1,0),(2,20),(3,28)} (mod(-,33)) $\cup R_{0,7}$
{(1,0),(2,19),(3,8)} (mod(-,33)) $\cup R_{0,8}$
{(1,0),(2,24),(3,9)} (mod(-,33)) $\cup R_{0,9}$
{(1,0),(2,29),(3,19)} (mod(-,33)) $\cup R_{0,10}$
{(1,0),(2,14),(3,1)} (mod(-,33)) $\cup R_{0,11}$
{(1,0),(2,4),(3,18)} (mod(-,33)) $\cup R_{0,12}$
{(1,0),(2,13),(3,32)} (mod(-,33)) $\cup R_{0,13}$.

The last three parallel classes of triples are given by $\bigcup_{i=0}^{3} R_{i,14}$, $\bigcup_{i=0}^{3} R_{i,15}$ and $\bigcup_{i=0}^{3} R_{i,16}$.

Example A.9 There exists a URD({3, 4}; 132) with $r_4 = 9$.

Proof Let Z_λ be the group of residues modulo λ. The design is constructed on $X = Z_4 \times Z_{33}$. Take the following nine parallel classes with blocks of size 4:

$P_1 = \{(0,0),(1,0),(2,0),(3,0)\}\ (\text{mod}(-,33))$
$P_2 = \{(0,0),(1,1),(2,2),(3,3)\}\ (\text{mod}(-,33))$
$P_3 = \{(0,3),(1,2),(2,1),(3,0)\}\ (\text{mod}(-,33))$
$P_4 = \{(0,0),(1,2),(2,4),(3,6)\}\ (\text{mod}(-,33))$
$P_5 = \{(0,6),(1,4),(2,2),(3,0)\}\ (\text{mod}(-,33))$
$P_6 = \{(0,0),(1,3),(2,6),(3,9)\}\ (\text{mod}(-,33))$
$P_7 = \{(0,9),(1,6),(2,3),(3,0)\}\ (\text{mod}(-,33))$
$P_8 = \{(0,0),(1,4),(2,8),(3,12)\}\ (\text{mod}(-,33))$
$P_9 = \{(0,12),(1,8),(2,4),(3,0)\}\ (\text{mod}(-,33))$.

It is well known that there is an $\text{RPBD}(3;33)$ with 16 parallel classes. Place a copy of this design on each Z_{33} set. Denote the resolution classes by $R_{i,j}$ where $i \in Z_4$ denotes on which copy of Z_{33} the parallel class is placed and $j = 1,...,16$ are the resolution classes. The parallel classes of the triples are formed as follows:

{(0,0),(1,5),(2,23)} (mod(-,33)) $\cup R_{3,1}$
{(0,0),(1,24),(2,19)} (mod(-,33)) $\cup R_{3,2}$
{(0,0),(1,21),(2,15)} (mod(-,33)) $\cup R_{3,3}$
{(0,0),(1,17),(2,1)} (mod(-,33)) $\cup R_{3,4}$
{(0,0),(1,6),(2,30)} (mod(-,33)) $\cup R_{3,5}$
{(0,0),(1,16),(2,28)} (mod(-,33)) $\cup R_{3,6}$
{(0,0),(1,9),(2,24)} (mod(-,33)) $\cup R_{3,7}$
{(0,0),(1,10),(2,20)} (mod(-,33)) $\cup R_{3,8}$
{(0,0),(1,28),(2,9)} (mod(-,33)) $\cup R_{3,9}$
{(0,0),(1,20),(2,12)} (mod(-,33)) $\cup R_{3,10}$
{(0,0),(1,23),(2,10)} (mod(-,33)) $\cup R_{3,11}$
{(0,0),(1,12),(2,21)} (mod(-,33)) $\cup R_{3,12}$

{(0,0),(1,15),(3,4)} (mod(-,33)) $\cup R_{2,1}$
{(0,0),(1,13),(3,14)} (mod(-,33)) $\cup R_{2,2}$
{(0,0),(1,7),(3,26)} (mod(-,33)) $\cup R_{2,3}$
{(0,0),(1,26),(3,11)} (mod(-,33)) $\cup R_{2,4}$
{(0,0),(1,18),(3,13)} (mod(-,33)) $\cup R_{2,5}$
{(0,0),(1,8),(3,17)} (mod(-,33)) $\cup R_{2,6}$
{(0,0),(1,25),(3,7)} (mod(-,33)) $\cup R_{2,7}$
{(0,0),(1,22),(3,15)} (mod(-,33)) $\cup R_{2,8}$
{(0,0),(1,27),(3,8)} (mod(-,33)) $\cup R_{2,9}$
{(0,0),(1,14),(3,19)} (mod(-,33)) $\cup R_{2,10}$
{(0,0),(1,19),(3,18)} (mod(-,33)) $\cup R_{2,11}$
{(0,0),(1,11),(3,1)} (mod(-,33)) $\cup R_{2,12}$

{(0,0),(2,7),(3,22)} (mod(-,33)) $\cup R_{1,1}$
{(0,0),(2,17),(3,25)} (mod(-,33)) $\cup R_{1,2}$
{(0,0),(2,32),(3,10)} (mod(-,33)) $\cup R_{1,3}$
{(0,0),(2,16),(3,32)} (mod(-,33)) $\cup R_{1,4}$
{(0,0),(2,26),(3,2)} (mod(-,33)) $\cup R_{1,5}$
{(0,0),(2,3),(3,16)} (mod(-,33)) $\cup R_{1,6}$
{(0,0),(2,11),(3,29)} (mod(-,33)) $\cup R_{1,7}$
{(0,0),(2,5),(3,31)} (mod(-,33)) $\cup R_{1,8}$
{(0,0),(2,22),(3,28)} (mod(-,33)) $\cup R_{1,9}$
{(0,0),(2,13),(3,20)} (mod(-,33)) $\cup R_{1,10}$
{(0,0),(2,18),(3,23)} (mod(-,33)) $\cup R_{1,11}$
{(0,0),(2,14),(3,5)} (mod(-,33)) $\cup R_{1,12}$

{(1,0),(2,21),(3,10)} (mod(-,33)) $\cup R_{0,1}$
{(1,0),(2,8),(3,20)} (mod(-,33)) $\cup R_{0,2}$
{(1,0),(2,6),(3,16)} (mod(-,33)) $\cup R_{0,3}$
{(1,0),(2,19),(3,7)} (mod(-,33)) $\cup R_{0,4}$
{(1,0),(2,22),(3,12)} (mod(-,33)) $\cup R_{0,5}$
{(1,0),(2,26),(3,13)} (mod(-,33)) $\cup R_{0,6}$
{(1,0),(2,11),(3,3)} (mod(-,33)) $\cup R_{0,7}$
{(1,0),(2,5),(3,24)} (mod(-,33)) $\cup R_{0,8}$
{(1,0),(2,23),(3,17)} (mod(-,33)) $\cup R_{0,9}$
{(1,0),(2,13),(3,30)} (mod(-,33)) $\cup R_{0,10}$
{(1,0),(2,16),(3,11)} (mod(-,33)) $\cup R_{0,11}$
{(1,0),(2,7),(3,21)} (mod(-,33)) $\cup R_{0,12}$.

The last four parallel classes of triples are given by $\bigcup_{i=0}^{3} R_{i,13}$, $\bigcup_{i=0}^{3} R_{i,14}$, $\bigcup_{i=0}^{3} R_{i,15}$ and $\bigcup_{i=0}^{3} R_{i,16}$.

Example A.10 There exists a $\mathrm{URD}(\{3, 4\}; 156)$ with $r_4 = 7$.

Proof Let Z_λ be the group of residues modulo λ. The design is constructed on $X = Z_4 \times Z_{39}$. Take the following seven parallel classes with blocks of size 4:

$P_1 = \{(0,0), (1,0), (2,0), (3,0)\}\ (\mathrm{mod}(-,39))$
$P_2 = \{(0,0), (1,2), (2,4), (3,6)\}\ (\mathrm{mod}(-,39))$
$P_3 = \{(0,6), (1,4), (2,2), (3,0)\}\ (\mathrm{mod}(-,39))$
$P_4 = \{(0,0), (1,3), (2,6), (3,9)\}\ (\mathrm{mod}(-,39))$
$P_5 = \{(0,9), (1,6), (2,3), (3,0)\}\ (\mathrm{mod}(-,39))$
$P_6 = \{(0,0), (1,4), (2,8), (3,12)\}\ (\mathrm{mod}(-,39))$
$P_7 = \{(0,12), (1,8), (2,4), (3,0)\}\ (\mathrm{mod}(-,39))$.

It is well known that there exists an $\mathrm{RPBD}(3; 39)$ with 19 parallel classes. Place a copy of this design on each Z_{39} set. Denote the resolution classes by $R_{i,j}$ where $i \in Z_4$ denotes on which copy of Z_{39} the parallel class is placed and $j = 1,\ldots,19$ are the resolution classes. The parallel classes of the triples are formed as follows:

$\{(0,0),(1,31),(2,19)\}\ (\mathrm{mod}(-,39)) \cup R_{3,1}$
$\{(0,0),(1,5),(2,26)\}\ (\mathrm{mod}(-,39)) \cup R_{3,2}$
$\{(0,0),(1,13),(2,22)\}\ (\mathrm{mod}(-,39)) \cup R_{3,3}$
$\{(0,0),(1,29),(2,12)\}\ (\mathrm{mod}(-,39)) \cup R_{3,4}$
$\{(0,0),(1,9),(2,17)\}\ (\mathrm{mod}(-,39)) \cup R_{3,5}$
$\{(0,0),(1,1),(2,20)\}\ (\mathrm{mod}(-,39)) \cup R_{3,6}$
$\{(0,0),(1,16),(2,15)\}\ (\mathrm{mod}(-,39)) \cup R_{3,7}$
$\{(0,0),(1,14),(2,3)\}\ (\mathrm{mod}(-,39)) \cup R_{3,8}$
$\{(0,0),(1,12),(2,18)\}\ (\mathrm{mod}(-,39)) \cup R_{3,9}$
$\{(0,0),(1,20),(2,14)\}\ (\mathrm{mod}(-,39)) \cup R_{3,10}$
$\{(0,0),(1,17),(2,9)\}\ (\mathrm{mod}(-,39)) \cup R_{3,11}$
$\{(0,0),(1,21),(2,7)\}\ (\mathrm{mod}(-,39)) \cup R_{3,12}$
$\{(0,0),(1,22),(2,37)\}\ (\mathrm{mod}(-,39)) \cup R_{3,13}$
$\{(0,0),(1,15),(2,10)\}\ (\mathrm{mod}(-,39)) \cup R_{3,14}$
$\{(0,0),(1,8),(2,25)\}\ (\mathrm{mod}(-,39)) \cup R_{3,15}$
$\{(0,0),(1,32),(2,13)\}\ (\mathrm{mod}(-,39)) \cup R_{3,16}$

$\{(0,0),(2,36),(3,10)\}\ (\mathrm{mod}(-,39)) \cup R_{1,1}$
$\{(0,0),(2,24),(3,18)\}\ (\mathrm{mod}(-,39)) \cup R_{1,2}$
$\{(0,0),(2,30),(3,13)\}\ (\mathrm{mod}(-,39)) \cup R_{1,3}$
$\{(0,0),(2,32),(3,31)\}\ (\mathrm{mod}(-,39)) \cup R_{1,4}$
$\{(0,0),(2,29),(3,34)\}\ (\mathrm{mod}(-,39)) \cup R_{1,5}$
$\{(0,0),(2,34),(3,4)\}\ (\mathrm{mod}(-,39)) \cup R_{1,6}$
$\{(0,0),(2,1),(3,11)\}\ (\mathrm{mod}(-,39)) \cup R_{1,7}$
$\{(0,0),(2,23),(3,8)\}\ (\mathrm{mod}(-,39)) \cup R_{1,8}$
$\{(0,0),(2,2),(3,21)\}\ (\mathrm{mod}(-,39)) \cup R_{1,9}$
$\{(0,0),(2,38),(3,14)\}\ (\mathrm{mod}(-,39)) \cup R_{1,10}$
$\{(0,0),(2,11),(3,37)\}\ (\mathrm{mod}(-,39)) \cup R_{1,11}$
$\{(0,0),(2,28),(3,19)\}\ (\mathrm{mod}(-,39)) \cup R_{1,12}$
$\{(0,0),(2,16),(3,2)\}\ (\mathrm{mod}(-,39)) \cup R_{1,13}$
$\{(0,0),(2,21),(3,22)\}\ (\mathrm{mod}(-,39)) \cup R_{1,14}$
$\{(0,0),(2,5),(3,28)\}\ (\mathrm{mod}(-,39)) \cup R_{1,15}$
$\{(0,0),(2,27),(3,38)\}\ (\mathrm{mod}(-,39)) \cup R_{1,16}$

$\{(0,0),(1,34),(3,25)\}\ (\mathrm{mod}(-,39)) \cup R_{2,1}$
$\{(0,0),(1,38),(3,20)\}\ (\mathrm{mod}(-,39)) \cup R_{2,2}$
$\{(0,0),(1,19),(3,29)\}\ (\mathrm{mod}(-,39)) \cup R_{2,3}$
$\{(0,0),(1,18),(3,23)\}\ (\mathrm{mod}(-,39)) \cup R_{2,4}$
$\{(0,0),(1,23),(3,3)\}\ (\mathrm{mod}(-,39)) \cup R_{2,5}$
$\{(0,0),(1,6),(3,15)\}\ (\mathrm{mod}(-,39)) \cup R_{2,6}$
$\{(0,0),(1,28),(3,16)\}\ (\mathrm{mod}(-,39)) \cup R_{2,7}$
$\{(0,0),(1,25),(3,36)\}\ (\mathrm{mod}(-,39)) \cup R_{2,8}$
$\{(0,0),(1,10),(3,32)\}\ (\mathrm{mod}(-,39)) \cup R_{2,9}$
$\{(0,0),(1,24),(3,1)\}\ (\mathrm{mod}(-,39)) \cup R_{2,10}$
$\{(0,0),(1,11),(3,24)\}\ (\mathrm{mod}(-,39)) \cup R_{2,11}$
$\{(0,0),(1,26),(3,7)\}\ (\mathrm{mod}(-,39)) \cup R_{2,12}$
$\{(0,0),(1,7),(3,35)\}\ (\mathrm{mod}(-,39)) \cup R_{2,13}$
$\{(0,0),(1,33),(3,26)\}\ (\mathrm{mod}(-,39)) \cup R_{2,14}$
$\{(0,0),(1,27),(3,17)\}\ (\mathrm{mod}(-,39)) \cup R_{2,15}$
$\{(0,0),(1,30),(3,5)\}\ (\mathrm{mod}(-,39)) \cup R_{2,16}$

$\{(1,0),(2,16),(3,37)\}\ (\mathrm{mod}(-,39)) \cup R_{0,1}$
$\{(1,0),(2,5),(3,23)\}\ (\mathrm{mod}(-,39)) \cup R_{0,2}$
$\{(1,0),(2,7),(3,38)\}\ (\mathrm{mod}(-,39)) \cup R_{0,3}$
$\{(1,0),(2,26),(3,15)\}\ (\mathrm{mod}(-,39)) \cup R_{0,4}$
$\{(1,0),(2,1),(3,17)\}\ (\mathrm{mod}(-,39)) \cup R_{0,5}$
$\{(1,0),(2,29),(3,24)\}\ (\mathrm{mod}(-,39)) \cup R_{0,6}$
$\{(1,0),(2,14),(3,34)\}\ (\mathrm{mod}(-,39)) \cup R_{0,7}$
$\{(1,0),(2,18),(3,26)\}\ (\mathrm{mod}(-,39)) \cup R_{0,8}$
$\{(1,0),(2,24),(3,12)\}\ (\mathrm{mod}(-,39)) \cup R_{0,9}$
$\{(1,0),(2,13),(3,25)\}\ (\mathrm{mod}(-,39)) \cup R_{0,10}$
$\{(1,0),(2,30),(3,36)\}\ (\mathrm{mod}(-,39)) \cup R_{0,11}$
$\{(1,0),(2,12),(3,2)\}\ (\mathrm{mod}(-,39)) \cup R_{0,12}$
$\{(1,0),(2,10),(3,3)\}\ (\mathrm{mod}(-,39)) \cup R_{0,13}$
$\{(1,0),(2,32),(3,7)\}\ (\mathrm{mod}(-,39)) \cup R_{0,14}$
$\{(1,0),(2,11),(3,18)\}\ (\mathrm{mod}(-,39)) \cup R_{0,15}$
$\{(1,0),(2,23),(3,1)\}\ (\mathrm{mod}(-,39)) \cup R_{0,16}$.

The last three parallel classes of triples are given by $\bigcup_{i=0}^{3} R_{i,17}$, $\bigcup_{i=0}^{3} R_{i,18}$ and $\bigcup_{i=0}^{3} R_{i,19}$.

Example A.11 There exists a $\mathrm{URD}(\{3, 4\}; 156)$ with $r_4 = 9$.

Proof Let Z_λ be the group of residues modulo λ. The design is constructed on $X = Z_4 \times Z_{39}$. Take the following 9 parallel classes with blocks of size 4:

$P_1 = \{(0,0), (1,0), (2,0), (3,0)\}\ (\mathrm{mod}(-,39))$
$P_2 = \{(0,0), (1,1), (2,2), (3,3)\}\ (\mathrm{mod}(-,39))$
$P_3 = \{(0,3), (1,2), (2,1), (3,0)\}\ (\mathrm{mod}(-,39))$
$P_4 = \{(0,0), (1,2), (2,4), (3,6)\}\ (\mathrm{mod}(-,39)$
$P_5 = \{(0,6), (1,4), (2,2), (3,0)\}\ (\mathrm{mod}(-,39))$
$P_6 = \{(0,0), (1,4), (2,8), (3,13)\}\ (\mathrm{mod}(-,39))$
$P_7 = \{(0,13), (1,9), (2,5), (3,0)\}\ (\mathrm{mod}(-,39)$
$P_8 = \{(0,0), (1,8), (2,16), (3,24)\}\ (\mathrm{mod}(-,39))$
$P_9 = \{(0,24), (1,16), (2,8), (3,0)\}\ (\mathrm{mod}(-,39))$

It is well known that there is an $\mathrm{RPBD}(3; 39)$ with 19 parallel classes. Place a copy of this design on each Z_{39} set. Denote the resolution classes by $R_{i,j}$ where $i \in Z_4$ denotes on which copy of Z_{39} the parallel class is placed and $j = 1,...,19$ are the resolution classes. The parallel classes of the triples are formed as follows:

{(0,0),(1,3),(2,25)} (mod(-,39)) $\cup\ R_{3,1}$
{(0,0),(1,17),(2,38)} (mod(-,39)) $\cup\ R_{3,2}$
{(0,0),(1,7),(2,12)} (mod(-,39)) $\cup\ R_{3,3}$
{(0,0),(1,25),(2,5)} (mod(-,39)) $\cup\ R_{3,4}$
{(0,0),(1,15),(2,26)} (mod(-,39)) $\cup\ R_{3,5}$
{(0,0),(1,21),(2,33)} (mod(-,39)) $\cup\ R_{3,6}$
{(0,0),(1,14),(2,9)} (mod(-,39)) $\cup\ R_{3,7}$
{(0,0),(1,18),(2,32)} (mod(-,39)) $\cup\ R_{3,8}$
{(0,0),(1,20),(2,7)} (mod(-,39)) $\cup\ R_{3,9}$
{(0,0),(1,13),(2,6)} (mod(-,39)) $\cup\ R_{3,10}$
{(0,0),(1,11),(2,24)} (mod(-,39)) $\cup\ R_{3,11}$
{(0,0),(1,26),(2,20)} (mod(-,39)) $\cup\ R_{3,12}$
{(0,0),(1,10),(2,34)} (mod(-,39)) $\cup\ R_{3,13}$
{(0,0),(1,32),(2,11)} (mod(-,39)) $\cup\ R_{3,14}$
{(0,0),(1,6),(2,29)} (mod(-,39)) $\cup\ R_{3,15}$

{(0,0),(1,16),(3,30)} (mod(-,39)) $\cup\ R_{2,1}$
{(0,0),(1,12),(3,20)} (mod(-,39)) $\cup\ R_{2,2}$
{(0,0),(1,9),(3,4)} (mod(-,39)) $\cup\ R_{2,3}$
{(0,0),(1,34),(3,27)} (mod(-,39)) $\cup\ R_{2,4}$
{(0,0),(1,22),(3,1)} (mod(-,39)) $\cup\ R_{2,5}$
{(0,0),(1,29),(3,21)} (mod(-,39)) $\cup\ R_{2,6}$
{(0,0),(1,24),(3,12)} (mod(-,39)) $\cup\ R_{2,7}$
{(0,0),(1,36),(3,17)} (mod(-,39)) $\cup\ R_{2,8}$
{(0,0),(1,30),(3,19)} (mod(-,39)) $\cup\ R_{2,9}$
{(0,0),(1,27),(3,34)} (mod(-,39)) $\cup\ R_{2,10}$
{(0,0),(1,23),(3,9)} (mod(-,39)) $\cup\ R_{2,11}$
{(0,0),(1,33),(3,5)} (mod(-,39)) $\cup\ R_{2,12}$
{(0,0),(1,5),(3,22)} (mod(-,39)) $\cup\ R_{2,13}$
{(0,0),(1,28),(3,29)} (mod(-,39)) $\cup\ R_{2,14}$
{(0,0),(1,19),(3,18)}(mod(-,39)) $\cup\ R_{2,15}$

{(0,0),(2,21),(3,11)} (mod(-,39)) $\cup\ R_{1,1}$
{(0,0),(2,10),(3,16)} (mod(-,39)) $\cup\ R_{1,2}$
{(0,0),(2,1),(3,31)} (mod(-,39)) $\cup\ R_{1,3}$
{(0,0),(2,17),(3,38)} (mod(-,39)) $\cup\ R_{1,4}$
{(0,0),(2,27),(3,10)} (mod(-,39)) $\cup\ R_{1,5}$
{(0,0),(2,13),(3,28)} (mod(-,39)) $\cup\ R_{1,6}$
{(0,0),(2,28),(3,37)} (mod(-,39)) $\cup\ R_{1,7}$
{(0,0),(2,3),(3,23)} (mod(-,39)) $\cup\ R_{1,8}$
{(0,0),(2,14),(3,7)} (mod(-,39)) $\cup\ R_{1,9}$
{(0,0),(2,30),(3,2)} (mod(-,39)) $\cup\ R_{1,10}$
{(0,0),(2,15),(3,25)} (mod(-,39)) $\cup\ R_{1,11}$
{(0,0),(2,22),(3,35)} (mod(-,39)) $\cup\ R_{1,12}$
{(0,0),(2,19),(3,8)} (mod(-,39)) $\cup\ R_{1,13}$
{(0,0),(2,18),(3,32)} (mod(-,39)) $\cup\ R_{1,14}$

{(0,0),(2,36),(3,14)} (mod(-,39)) $\cup\ R_{1,15}$

{(1,0),(2,6),(3,3)} (mod(-,39)) $\cup\ R_{0,1}$
{(1,0),(2,29),(3,15)} (mod(-,39)) $\cup\ R_{0,2}$
{(1,0),(2,15),(3,22)} (mod(-,39)) $\cup\ R_{0,3}$
{(1,0),(2,36),(3,21)} (mod(-,39)) $\cup\ R_{0,4}$
{(1,0),(2,28),(3,12)} (mod(-,39)) $\cup\ R_{0,5}$
{(1,0),(2,7),(3,33)} (mod(-,39)) $\cup\ R_{0,6}$
{(1,0),(2,10),(3,26)} (mod(-,39)) $\cup\ R_{0,7}$
{(1,0),(2,20),(3,24)} (mod(-,39)) $\cup\ R_{0,8}$
{(1,0),(2,3),(3,36)} (mod(-,39)) $\cup\ R_{0,9}$
{(1,0),(2,30),(3,10)} (mod(-,39)) $\cup\ R_{0,10}$
{(1,0),(2,27),(3,6)} (mod(-,39)) $\cup\ R_{0,11}$
{(1,0),(2,16),(3,19)} (mod(-,39)) $\cup\ R_{0,12}$
{(1,0),(2,25),(3,13)} (mod(-,39)) $\cup\ R_{0,13}$

{(1,0),(2,9),(3,5)} (mod(-,39)) ∪ $R_{0,14}$

{(1,0),(2,17),(3,29)} (mod(-,39)) ∩ $R_{0,15}$

The last four parallel classes of triples are given by $\bigcup_{i=0}^{3} R_{i,16}$, $\bigcup_{i=0}^{3} R_{i,17}$, $\bigcup_{i=0}^{3} R_{i,18}$ and $\bigcup_{i=0}^{3} R_{i,19}$.

Example A.12 There exists a $\mathrm{URD}(\{3, 4\}; 204)$ with with $r_4 = 7$.

Proof Let Z_λ be the group of residues modulo λ . The design is constructed on $X = Z_4 \times Z_{51}$. Take the following seven parallel classes with blocks of size 4:

$P_1 = \{(0,0), (1,0), (2,0), (3,0)\}$ (mod(–,51))
$P_2 = \{(0,0), (1,1), (2,2), (3,3)\}$ (mod(–,51))
$P_3 = \{(0,3), (1,2), (2,1), (3,0)\}$ (mod(–,51))
$P_4 = \{(0,0), (1,2), (2,4), (3,6)\}$ (mod(–,51))
$P_5 = \{(0,6), (1,4), (2,2), (3,0)\}$ (mod(–,51))
$P_6 = \{(0,0), (1,4), (2,8), (3,13)\}$ (mod(–,51))
$P_7 = \{(0,13), (1,9), (2,5), (3,0)\}$ (mod(–,51))

It is well known that there is an $\mathrm{RPBD}(3; 51)$ with 25 parallel classes. Place a copy of this design on each Z_{51} set. Denote the resolution classes by $R_{i,j}$ where $i \in Z_4$ denotes on which copy of Z_{51} the parallel class is placed and $j = 1,...,25$ are the resolution classes. The parallel classes of the triples are formed as follows:

{(0,0),(1,37),(2,45)} (mod(-,51)) ∪ $R_{3,1}$
{(0,0),(1,3),(2,29)} (mod(-,51)) ∪ $R_{3,2}$
{(0,0),(1,45),(2,23)} (mod(-,51)) ∪ $R_{3,3}$
{(0,0),(1,21),(2,38)} (mod(-,51)) ∪ $R_{3,4}$
{(0,0),(1,26),(2,18)} (mod(-,51)) ∪ $R_{3,5}$
{(0,0),(1,36),(2,5)} (mod(-,51)) ∪ $R_{3,6}$
{(0,0),(1,27),(2,3)} (mod(-,51)) ∪ $R_{3,7}$
{(0,0),(1,43),(2,36)} (mod(-,51)) ∪ $R_{3,8}$
{(0,0),(1,9),(2,42)} (mod(-,51)) ∪ $R_{3,9}$
{(0,0),(1,32),(2,50)} (mod(-,51)) ∪ $R_{3,10}$
{(0,0),(1,29),(2,44)} (mod(-,51)) ∪ $R_{3,11}$
{(0,0),(1,40),(2,30)} (mod(-,51)) ∪ $R_{3,12}$
{(0,0),(1,18),(2,48)} (mod(-,51)) ∪ $R_{3,13}$
{(0,0),(1,34),(2,39)} (mod(-,51)) ∪ $R_{3,14}$
{(0,0),(1,23),(2,34)} (mod(-,51)) ∪ $R_{3,15}$
{(0,0),(1,10),(2,35)} (mod(-,51)) ∪ $R_{3,16}$
{(0,0),(1,24),(2,33)} (mod(-,51)) ∪ $R_{3,17}$
{(0,0),(1,35),(2,32)} (mod(-,51)) ∪ $R_{3,18}$
{(0,0),(1,11),(2,46)} (mod(-,51)) ∪ $R_{3,19}$
{(0,0),(1,38),(2,24)} (mod(-,51)) ∪ $R_{3,20}$
{(0,0),(1,48),(2,37)} (mod(-,51)) ∪ $R_{3,21}$
{(0,0),(1,15),(2,31)} (mod(-,51)) ∪ $R_{3,22}$

{(0,0),(1,25),(3,35)} (mod(-,51)) ∪ $R_{2,1}$
{(0,0),(1,42),(3,36)} (mod(-,51)) ∪ $R_{2,2}$
{(0,0),(1,7),(3,42)} (mod(-,51)) ∪ $R_{2,3}$
{(0,0),(1,33),(3,11)} (mod(-,51)) ∪ $R_{2,4}$
{(0,0),(1,5),(3,32)} (mod(-,51)) ∪ $R_{2,5}$
{(0,0),(1,8),(3,19)} (mod(-,51)) ∪ $R_{2,6}$
{(0,0),(1,19),(3,34)} (mod(-,51)) ∪ $R_{2,7}$
{(0,0),(1,12),(3,5)} (mod(-,51)) ∪ $R_{2,8}$
{(0,0),(1,46),(3,43)} (mod(-,51)) ∪ $R_{2,9}$
{(0,0),(1,16),(3,50)} (mod(-,51)) ∪ $R_{2,10}$
{(0,0),(1,13),(3,2)} (mod(-,51)) ∪ $R_{2,11}$
{(0,0),(1,30),(3,46)} (mod(-,51)) ∪ $R_{2,12}$
{(0,0),(1,28),(3,29)} (mod(-,51)) ∪∩ $R_{2,13}$
{(0,0),(1,31),(3,37)} (mod(-,51)) ∪ $R_{2,14}$
{(0,0),(1,39),(3,16)} (mod(-,51)) ∪ $R_{2,15}$
{(0,0),(1,44),(3,26)} (mod(-,51)) ∪ $R_{2,16}$
{(0,0),(1,17),(3,41)} (mod(-,51)) ∪ $R_{2,17}$
{(0,0),(1,6),(3,23)} (mod(-,51)) ∪ $R_{2,18}$
{(0,0),(1,22),(3,12)} (mod(-,51)) ∪ $R_{2,19}$
{(0,0),(1,41),(3,40)} (mod(-,51)) ∪ $R_{2,20}$
{(0,0),(1,14),(3,21)} (mod(-,51)) ∪ $R_{2,21}$
{(0,0),(1,20),(3,28)} (mod(-,51)) ∪ $R_{2,22}$

{(0,0),(2,22),(3,33)} (mod(-,51)) ∪ $R_{1,1}$
{(0,0),(2,6),(3,14)} (mod(-,51)) ∪ $R_{1,2}$
{(0,0),(2,9),(3,44)} (mod(-,51)) ∪ $R_{1,3}$
{(0,0),(2,26),(3,30)} (mod(-,51)) ∪ $R_{1,4}$
{(0,0),(2,15),(3,18)} (mod(-,51)) ∪ $R_{1,5}$
{(0,0),(2,21),(3,49)} (mod(-,51)) ∪ $R_{1,6}$

{(0,0),(2,20),(3,10)} (mod(-,51)) ∪ $R_{1,7}$
{(0,0),(2,27),(3,15)} (mod(-,51)) ∪ $R_{1,8}$
{(0,0),(2,10),(3,31)} (mod(-,51)) ∪ $R_{1,9}$
{(0,0),(2,25),(3,47)} (mod(-,51)) ∪ $R_{1,10}$
{(0,0),(2,41),(3,24)} (mod(-,51)) ∪ $R_{1,11}$
{(0,0),(2,16),(3,22)} (mod(-,51)) ∪ $R_{1,12}$

{(0,0),(2,11),(3,20)} (mod(-,51)) ∪ $R_{1,13}$
{(0,0),(2,40),(3,8)} (mod(-,51)) ∪ $R_{1,14}$
{(0,0),(2,7),(3,17)} (mod(-,51)) ∪ $R_{1,15}$
{(0,0),(2,19),(3,39)} (mod(-,51)) ∪ $R_{1,16}$
{(0,0),(2,28),(3,4)} (mod(-,51)) ∪ $R_{1,17}$
{(0,0),(2,13),(3,7)} (mod(-,51)) ∪ $R_{1,18}$
{(0,0),(2,12),(3,25)} (mod(-,51)) ∪ $R_{1,19}$
{(0,0),(2,1),(3,27)} (mod(-,51)) ∪ $R_{1,20}$
{(0,0),(2,14),(3,1)} (mod(-,51)) ∪ $R_{1,21}$
{(0,0),(2,17),(3,9)} (mod(-,51)) ∪ $R_{1,22}$

{(1,0),(2,7),(3,23)} (mod(-,51)) ∪ $R_{0,1}$
{(1,0),(2,14),(3,37)} (mod(-,51)) ∪ $R_{0,2}$
{(1,0),(2,36),(3,32)} (mod(-,51)) ∪ $R_{0,3}$
{(1,0),(2,31),(3,43)} (mod(-,51)) ∪ $R_{0,4}$
{(1,0),(2,6),(3,13)} (mod(-,51)) ∪ $R_{0,5}$
{(1,0),(2,3),(3,18)} (mod(-,51)) ∪ $R_{0,6}$
{(1,0),(2,22),(3,46)} (mod(-,51)) ∪ $R_{0,7}$
{(1,0),(2,24),(3,3)} (mod(-,51)) ∪ $R_{0,8}$
{(1,0),(2,23),(3,12)} (mod(-,51)) ∪ $R_{0,9}$
{(1,0),(2,38),(3,19)} (mod(-,51)) ∪ $R_{0,10}$
{(1,0),(2,13),(3,31)} (mod(-,51)) ∪ $R_{0,11}$
{(1,0),(2,10),(3,39)} (mod(-,51)) ∪ $R_{0,12}$
{(1,0),(2,32),(3,14)} (mod(-,51)) ∪ $R_{0,13}$
{(1,0),(2,39),(3,36)} (mod(-,51)) ∪ $R_{0,14}$
{(1,0),(2,34),(3,25)} (mod(-,51)) ∪ $R_{0,15}$
{(1,0),(2,28),(3,21)} (mod(-,51)) ∪ $R_{0,16}$
{(1,0),(2,46),(3,20)} (mod(-,51)) ∪ $R_{0,17}$
{(1,0),(2,45),(3,30)} (mod(-,51)) ∪ $R_{0,18}$
{(1,0),(2,19),(3,5)} (mod(-,51)) ∪ $R_{0,19}$
{(1,0),(2,42),(3,22)} (mod(-,51)) ∪ $R_{0,20}$
{(1,0),(2,21),(3,38)} (mod(-,51)) ∪ $R_{0,21}$
{(1,0),(2,12),(3,26)} (mod(-,51)) ∪ $R_{0,22}$

The last three parallel classes of triples are given by $\bigcup_{i=0}^{3} R_{i,23}$, $\bigcup_{i=0}^{3} R_{i,24}$ and $\bigcup_{i=0}^{3} R_{i,25}$.

Example A.13 There exists a $\text{URD}(\{3, 4\}; 204)$ with $r_4 = 9$.

Proof Let Z_λ be the group of residues modulo λ. The design is constructed on $X = Z_4 \times Z_{51}$. Take the following 9 parallel classes with blocks of size 4:

$P_1 = \{(0,0), (1,0), (2,0), (3,0)\} \ (\text{mod}(-,51))$
$P_2 = \{(0,0), (1,1), (2,2), (3,3)\} \ (\text{mod}(-,51))$
$P_3 = \{(0,3), (1,2), (2,1), (3,0)\} \ (\text{mod}(-,51))$
$P_4 = \{(0,0), (1,2), (2,4), (3,6)\} \ (\text{mod}(-,51))$
$P_5 = \{(0,6), (1,4), (2,2), (3,0)\} \ (\text{mod}(-,51))$
$P_6 = \{(0,0), (1,4), (2,8), (3,13)\} \ (\text{mod}(-,51))$
$P_7 = \{(0,13), (1,9), (2,5), (3,0)\} \ (\text{mod}(-,51))$
$P_8 = \{(0,0), (1,8), (2,16), (3,24)\} \ (\text{mod}(-,51))$
$P_9 = \{(0,24), (1,16), (2,8), (3,0)\} \ (\text{mod}(-,51))$

It is well known that there is an $\text{RPBD}(3; 51)$ with 25 parallel classes. Place a copy of this design on each Z_{51} set. Denote the resolution classes by $R_{i,j}$ where $i \in Z_4$ denotes on which copy of Z_{51} the parallel class is placed and $j = 1,...,25$ are the resolution classes. The parallel classes of the triples are formed as follows:

{(0,0),(1,41),(2,10)} (mod(-,51)) $\cup R_{3,1}$
{(0,0),(1,34),(2,1)} (mod(-,51)) $\cup R_{3,2}$
{(0,0),(1,9),(2,32)} (mod(-,51)) $\cup R_{3,3}$
{(0,0),(1,33),(2,11)} (mod(-,51)) $\cup R_{3,4}$
{(0,0),(1,39),(2,22)} (mod(-,51)) $\cup R_{3,5}$
{(0,0),(1,27),(2,48)} (mod(-,51)) $\cup R_{3,6}$
{(0,0),(1,15),(2,3)} (mod(-,51)) $\cup R_{3,7}$
{(0,0),(1,38),(2,15)} (mod(-,51)) $\cup R_{3,8}$
{(0,0),(1,10),(2,40)} (mod(-,51)) $\cup R_{3,9}$
{(0,0),(1,35),(2,21)} (mod(-,51)) $\cup R_{3,10}$
{(0,0),(1,24),(2,5)} (mod(-,51)) $\cup R_{3,11}$
{(0,0),(1,6),(2,37)} (mod(-,51)) $\cup R_{3,12}$
{(0,0),(1,14),(2,26)} (mod(-,51)) $\cup R_{3,13}$
{(0,0),(1,13),(2,27)} (mod(-,51)) $\cup R_{3,14}$
{(0,0),(1,23),(2,34)} (mod(-,51)) $\cup R_{3,15}$
{(0,0),(1,3),(2,19)} (mod(-,51)) $\cup R_{3,16}$
{(0,0),(1,36),(2,23)} (mod(-,51)) $\cup R_{3,17}$
{(0,0),(1,11),(2,14)} (mod(-,51)) $\cup R_{3,18}$
{(0,0),(1,40),(2,33)} (mod(-,51)) $\cup R_{3,19}$
{(0,0),(1,45),(2,42)} (mod(-,51)) $\cup R_{3,20}$
{(0,0),(1,12),(2,17)} (mod(-,51)) $\cup R_{3,21}$

{(0,0),(1,30),(3,17)} (mod(-,51)) $\cup R_{2,1}$
{(0,0),(1,22),(3,15)} (mod(-,51)) $\cup R_{2,2}$
{(0,0),(1,46),(3,22)} (mod(-,51)) $\cup R_{2,3}$
{(0,0),(1,42),(3,41)} (mod(-,51)) $\cup R_{2,4}$
{(0,0),(1,21),(3,2)} (mod(-,51)) $\cup R_{2,5}$
{(0,0),(1,25),(3,32)} (mod(-,51)) $\cup R_{2,6}$
{(0,0),(1,29),(3,37)} (mod(-,51)) $\cup R_{2,7}$
{(0,0),(1,26),(3,12)} (mod(-,51)) $\cup R_{2,8}$
{(0,0),(1,44),(3,10)} (mod(-,51)) $\cup R_{2,9}$
{(0,0),(1,7),(3,35)} (mod(-,51)) $\cup R_{2,10}$
{(0,0),(1,37),(3,1)} (mod(-,51)) $\cup R_{2,11}$
{(0,0),(1,32),(3,5)} (mod(-,51)) $\cup R_{2,12}$
{(0,0),(1,5),(3,25)} (mod(-,51)) $\cup R_{2,13}$
{(0,0),(1,17),(3,43)} (mod(-,51)) $\cup R_{2,14}$
{(0,0),(1,18),(3,19)} (mod(-,51)) $\cup R_{2,15}$
{(0,0),(1,20),(3,14)} (mod(-,51)) $\cup R_{2,16}$
{(0,0),(1,28),(3,33)} (mod(-,51)) $\cup R_{2,17}$
{(0,0),(1,16),(3,30)} (mod(-,51)) $\cup R_{2,18}$
{(0,0),(1,48),(3,40)} (mod(-,51)) $\cup R_{2,19}$
{(0,0),(1,31),(3,42)} (mod(-,51)) $\cup R_{2,20}$
{(0,0),(1,19),(3,7)} (mod(-,51)) $\cup R_{2,21}$

{(0,0),(2,18),(3,50)} (mod(-,51)) $\cup R_{1,1}$
{(0,0),(2,38),(3,21)} (mod(-,51)) $\cup R_{1,2}$
{(0,0),(2,6),(3,36)} (mod(-,51)) $\cup R_{1,3}$
{(0,0),(2,24),(3,44)} (mod(-,51)) $\cup R_{1,4}$
{(0,0),(2,7),(3,31)} (mod(-,51)) $\cup R_{1,5}$
{(0,0),(2,41),(3,34)} (mod(-,51)) $\cup R_{1,6}$
{(0,0),(2,28),(3,47)} (mod(-,51)) $\cup R_{1,7}$
{(0,0),(2,31),(3,11)} (mod(-,51)) $\cup R_{1,8}$
{(0,0),(2,20),(3,23)} (mod(-,51)) $\cup R_{1,9}$
{(0,0),(2,30),(3,26)} (mod(-,51)) $\cup R_{1,10}$
{(0,0),(2,39),(3,29)} (mod(-,51)) $\cup R_{1,11}$
{(0,0),(2,50),(3,28)} (mod(-,51)) $\cup R_{1,12}$
{(0,0),(2,36),(3,49)} (mod(-,51)) $\cup R_{1,13}$
{(0,0),(2,29),(3,4)} (mod(-,51)) $\cup R_{1,14}$
{(0,0),(2,45),(3,8)} (mod(-,51)) $\cup R_{1,15}$
{(0,0),(2,44),(3,9)} (mod(-,51)) $\cup R_{1,16}$
{(0,0),(2,9),(3,18)} (mod(-,51)) $\cup R_{1,17}$
{(0,0),(2,46),(3,20)} (mod(-,51)) $\cup R_{1,18}$
{(0,0),(2,12),(3,39)} (mod(-,51)) $\cup R_{1,19}$
{(0,0),(2,13),(3,46)} (mod(-,51)) $\cup R_{1,20}$
{(0,0),(2,25),(3,16)} (mod(-,51)) $\cup R_{1,21}$

{(1,0),(2,19),(3,41)} (mod(-,51)) $\cup R_{0,1}$
{(1,0),(2,46),(3,34)} (mod(-,51)) $\cup R_{0,2}$
{(1,0),(2,42),(3,46)} (mod(-,51)) $\cup R_{0,3}$
{(1,0),(2,26),(3,23)} (mod(-,51)) $\cup R_{0,4}$
{(1,0),(2,41),(3,48)} (mod(-,51)) $\cup R_{0,5}$
{(1,0),(2,40),(3,12)} (mod(-,51)) $\cup R_{0,6}$
{(1,0),(2,24),(3,36)} (mod(-,51)) $\cup R_{0,7}$
{(1,0),(2,15),(3,25)} (mod(-,51)) $\cup R_{0,8}$
{(1,0),(2,7),(3,18)} (mod(-,51)) $\cup R_{0,9}$
{(1,0),(2,27),(3,33)} (mod(-,51)) $\cup R_{0,10}$
{(1,0),(2,13),(3,30)} (mod(-,51)) $\cup R_{0,11}$
{(1,0),(2,36),(3,13)} (mod(-,51)) $\cup R_{0,12}$
{(1,0),(2,17),(3,6)} (mod(-,51)) $\cup R_{0,13}$
{(1,0),(2,22),(3,40)} (mod(-,51)) $\cup R_{0,14}$
{(1,0),(2,45),(3,29)} (mod(-,51)) $\cup R_{0,15}$
{(1,0),(2,25),(3,10)} (mod(-,51)) $\cup R_{0,16}$
{(1,0),(2,33),(3,19)} (mod(-,51)) $\cup R_{0,17}$
{(1,0),(2,6),(3,21)} (mod(-,51)) $\cup R_{0,18}$
{(1,0),(2,35),(3,22)} (mod(-,51)) $\cup R_{0,19}$
{(1,0),(2,9),(3,3)} (mod(-,51)) $\cup R_{0,20}$
{(1,0),(2,10),(3,31)} (mod(-,51)) $\cup R_{0,21}$

The last 4 parallel classes of triples are given by $\bigcup_{i=0}^{3} R_{i,22}$, $\bigcup_{i=0}^{3} R_{i,23}$, $\bigcup_{i=0}^{3} R_{i,24}$ and $\bigcup_{i=0}^{3} R_{i,25}$.

Example A.14 There exists a $\mathrm{URD}(\{3, 4\}; 228)$ with $r_4 = 9$.

Proof Let Z_λ be the group of residues modulo λ. The design is constructed on $X = Z_4 \times Z_{57}$. Take the following 9 parallel classes with blocks of size 4:

$P_1 = \{(0,0), (1,0), (2,0), (3,0)\}$ (mod(−,57))
$P_2 = \{(0,0), (1,1), (2,2), (3,3)\}$ (mod(−,57))
$P_3 = \{(0,3), (1,2), (2,1), (3,0)\}$ (mod(−,57))
$P_4 = \{(0,0), (1,2), (2,4), (3,6)\}$ (mod(−,57))
$P_5 = \{(0,6), (1,4), (2,2), (3,0)\}$ (mod(−,57))
$P_6 = \{(0,0), (1,4), (2,8), (3,13)\}$ (mod(−,57))
$P_7 = \{(0,13), (1,9), (2,5), (3,0)\}$ (mod(−,57))
$P_8 = \{(0,0), (1,6), (2,12), (3,18)\}$ (mod(−,57))
$P_9 = \{(0,18), (1,12), (2,6), (3,0)\}$ (mod(−,57))

It is well known that there is an RPBD(3; 57) with 28 parallel classes. Place a copy of this design on each Z_{57} set. Denote the resolution classes by $R_{i,j}$ where $i \in Z_4$ denotes on which copy of Z_{57} the parallel class is placed and $j = 1,...,28$ are the resolution classes. The parallel classes of the triples are formed as follows:

{(0,0),(1,5),(2,23)} (mod(-,57)) $\cup R_{3,1}$
{(0,0),(1,44),(2,1)} (mod(-,57)) $\cup R_{3,2}$
{(0,0),(1,37),(2,47)} (mod(-,57)) $\cup R_{3,3}$
{(0,0),(1,41),(2,33)} (mod(-,57)) $\cup R_{3,4}$
{(0,0),(1,14),(2,3)} (mod(-,57)) $\cup R_{3,5}$
{(0,0),(1,12),(2,31)} (mod(-,57)) $\cup R_{3,6}$
{(0,0),(1,29),(2,44)} (mod(-,57)) $\cup R_{3,7}$
{(0,0),(1,11),(2,38)} (mod(-,57)) $\cup R_{3,8}$
{(0,0),(1,25),(2,37)} (mod(-,57)) $\cup R_{3,9}$
{(0,0),(1,32),(2,39)} (mod(-,57)) $\cup R_{3,10}$
{(0,0),(1,19),(2,40)} (mod(-,57)) $\cup R_{3,11}$
{(0,0),(1,21),(2,52)} (mod(-,57)) $\cup R_{3,12}$
{(0,0),(1,42),(2,18)} (mod(-,57)) $\cup R_{3,13}$
{(0,0),(1,38),(2,10)} (mod(-,57)) $\cup R_{3,14}$
{(0,0),(1,24),(2,14)} (mod(-,57)) $\cup R_{3,15}$
{(0,0),(1,9),(2,48)} (mod(-,57)) $\cup R_{3,16}$
{(0,0),(1,27),(2,22)} (mod(-,57)) $\cup R_{3,17}$
{(0,0),(1,13),(2,43)} (mod(-,57)) $\cup R_{3,18}$
{(0,0),(1,46),(2,11)} (mod(-,57)) $\cup R_{3,19}$
{(0,0),(1,45),(2,20)} (mod(-,57)) $\cup R_{3,20}$
{(0,0),(1,23),(2,46)} (mod(-,57)) $\cup R_{3,21}$
{(0,0),(1,20),(2,5)} (mod(-,57)) $\cup R_{3,22}$
{(0,0),(1,50),(2,21)} (mod(-,57)) $\cup R_{3,23}$
{(0,0),(1,10),(2,36)} (mod(-,57)) $\cup R_{3,24}$

{(0,0),(1,40),(3,9)} (mod(-,57)) $\cup R_{2,1}$
{(0,0),(1,17),(3,20)} (mod(-,57)) $\cup R_{2,2}$
{(0,0),(1,48),(3,21)} (mod(-,57)) $\cup R_{2,3}$
{(0,0),(1,8),(3,36)} (mod(-,57)) $\cup R_{2,4}$
{(0,0),(1,26),(3,23)} (mod(-,57)) $\cup R_{2,5}$
{(0,0),(1,28),(3,43)} (mod(-,57)) $\cup R_{2,6}$
{(0,0),(1,52),(3,45)} (mod(-,57)) $\cup R_{2,7}$
{(0,0),(1,47),(3,22)} (mod(-,57)) $\cup R_{2,8}$
{(0,0),(1,22),(3,49)} (mod(-,57)) $\cup R_{2,9}$
{(0,0),(1,16),(3,10)} (mod(-,57)) $\cup R_{2,10}$
{(0,0),(1,34),(3,42)} (mod(-,57)) $\cup R_{2,11}$
{(0,0),(1,49),(3,14)} (mod(-,57)) $\cup R_{2,12}$
{(0,0),(1,36),(3,50)} (mod(-,57)) $\cup R_{2,13}$
{(0,0),(1,18),(3,29)} (mod(-,57)) $\cup R_{2,14}$
{(0,0),(1,33),(3,7)} (mod(-,57)) $\cup R_{2,15}$
{(0,0),(1,54),(3,2)} (mod(-,57)) $\cup R_{2,16}$
{(0,0),(1,3),(3,16)} (mod(-,57)) $\cup R_{2,17}$
{(0,0),(1,35),(3,53)} (mod(-,57)) $\cup R_{2,18}$
{(0,0),(1,15),(3,32)} (mod(-,57)) $\cup R_{2,19}$
{(0,0),(1,39),(3,1)} (mod(-,57)) $\cup R_{2,20}$
{(0,0),(1,7),(3,56)} (mod(-,57)) $\cup R_{2,21}$
{(0,0),(1,31),(3,37)} (mod(-,57)) $\cup R_{2,22}$
{(0,0),(1,30),(3,31)} (mod(-,57)) $\cup R_{2,23}$
{(0,0),(1,43),(3,24)} (mod(-,57)) $\cup R_{2,24}$

$\{(0,0),(2,32),(3,55)\}\ (\mathrm{mod}(-,57)) \cup R_{1,1}$
$\{(0,0),(2,51),(3,48)\}\ (\mathrm{mod}(-,57)) \cup R_{1,2}$
$\{(0,0),(2,27),(3,19)\}\ (\mathrm{mod}(-,57)) \cup R_{1,3}$
$\{(0,0),(2,25),(3,4)\}\ (\mathrm{mod}(-,57)) \cup R_{1,14}$
$\{(0,0),(2,41),(3,52)\}\ (\mathrm{mod}(-,57)) \cup R_{1,5}$
$\{(0,0),(2,19),(3,34)\}\ (\mathrm{mod}(-,57)) \cup R_{1,6}$
$\{(0,0),(2,28),(3,47)\}\ (\mathrm{mod}(-,57)) \cup R_{1,7}$
$\{(0,0),(2,17),(3,8)\}\ (\mathrm{mod}(-,57)) \cup R_{1,8}$
$\{(0,0),(2,34),(3,12)\}\ (\mathrm{mod}(-,57)) \cup R_{1,9}$
$\{(0,0),(2,30),(3,17)\}\ (\mathrm{mod}(-,57)) \cup R_{1,10}$
$\{(0,0),(2,42),(3,25)\}\ (\mathrm{mod}(-,57)) \cup R_{1,11}$
$\{(0,0),(2,54),(3,27)\}\ (\mathrm{mod}(-,57)) \cup R_{1,12}$
$\{(0,0),(2,29),(3,38)\}\ (\mathrm{mod}(-,57)) \cup R_{1,13}$
$\{(0,0),(2,6),(3,35)\}\ (\mathrm{mod}(-,57)) \cup R_{1,14}$
$\{(0,0),(2,15),(3,33)\}\ (\mathrm{mod}(-,57)) \cup R_{1,15}$
$\{(0,0),(2,35),(3,15)\}\ (\mathrm{mod}(-,57)) \cup R_{1,16}$
$\{(0,0),(2,56),(3,40)\}\ (\mathrm{mod}(-,57)) \cup R_{1,17}$
$\{(0,0),(2,7),(3,28)\}\ (\mathrm{mod}(-,57)) \cup R_{1,18}$
$\{(0,0),(2,13),(3,41)\}\ (\mathrm{mod}(-,57)) \cup R_{1,19}$
$\{(0,0),(2,9),(3,5)\}\ (\mathrm{mod}(-,57)) \cup R_{1,20}$
$\{(0,0),(2,50),(3,26)\}\ (\mathrm{mod}(-,57)) \cup R_{1,21}$
$\{(0,0),(2,24),(3,46)\}\ (\mathrm{mod}(-,57)) \cup R_{1,22}$
$\{(0,0),(2,16),(3,30)\}\ (\mathrm{mod}(-,57)) \cup R_{1,23}$
$\{(0,0),(2,26),(3,11)\}\ (\mathrm{mod}(-,57)) \cup R_{1,24}$

$\{(1,0),(2,16),(3,36)\}\ (\mathrm{mod}(-,57)) \cup R_{0,1}$
$\{(1,0),(2,9),(3,35)\}\ (\mathrm{mod}(-,57)) \cup R_{0,2}$
$\{(1,0),(2,48),(3,16)\}\ (\mathrm{mod}(-,57)) \cup R_{0,3}$
$\{(1,0),(2,34),(3,24)\}\ (\mathrm{mod}(-,57)) \cup R_{0,4}$
$\{(1,0),(2,38),(3,20)\}\ (\mathrm{mod}(-,57)) \cup R_{0,5}$
$\{(1,0),(2,20),(3,23)\}\ (\mathrm{mod}(-,57)) \cup R_{0,6}$
$\{(1,0),(2,50),(3,25)\}\ (\mathrm{mod}(-,57)) \cup R_{0,7}$
$\{(1,0),(2,13),(3,56)\}\ (\mathrm{mod}(-,57)) \cup R_{0,8}$
$\{(1,0),(2,54),(3,47)\}\ (\mathrm{mod}(-,57)) \cup R_{0,9}$
$\{(1,0),(2,25),(3,37)\}\ (\mathrm{mod}(-,57)) \cup R_{0,10}$
$\{(1,0),(2,24),(3,40)\}\ (\mathrm{mod}(-,57)) \cup R_{0,11}$
$\{(1,0),(2,43),(3,10)\}\ (\mathrm{mod}(-,57)) \cup R_{0,12}$
$\{(1,0),(2,41),(3,29)\}\ (\mathrm{mod}(-,57)) \cup R_{0,13}$
$\{(1,0),(2,8),(3,21)\}\ (\mathrm{mod}(-,57)) \cup R_{0,14}$
$\{(1,0),(2,45),(3,52)\}\ (\mathrm{mod}(-,57)) \cup R_{0,15}$
$\{(1,0),(2,40),(3,44)\}\ (\mathrm{mod}(-,57)) \cup R_{0,16}$
$\{(1,0),(2,17),(3,34)\}\ (\mathrm{mod}(-,57)) \cup R_{0,17}$
$\{(1,0),(2,5),(3,39)\}\ (\mathrm{mod}(-,57)) \cup R_{0,18}$
$\{(1,0),(2,44),(3,33)\}\ (\mathrm{mod}(-,57)) \cup R_{0,19}$
$\{(1,0),(2,3),(3,41)\}\ (\mathrm{mod}(-,57)) \cup R_{0,20}$
$\{(1,0),(2,35),(3,43)\}\ (\mathrm{mod}(-,57)) \cup R_{0,21}$
$\{(1,0),(2,36),(3,46)\}\ (\mathrm{mod}(-,57)) \cup R_{0,22}$
$\{(1,0),(2,37),(3,7)\}\ (\mathrm{mod}(-,57)) \cup R_{0,23}$
$\{(1,0),(2,11),(3,42)\}\ (\mathrm{mod}(-,57)) \cup R_{0,24}.$

The last 4 parallel classes of triples are given by $\bigcup_{i=0}^{3} R_{i,25}$, $\bigcup_{i=0}^{3} R_{i,26}$, $\bigcup_{i=0}^{3} R_{i,27}$ and $\bigcup_{i=0}^{3} R_{i,28}$.

Example A.15 A uniform $\{2, 4\}$-LRGDD_2 of type 2^6 with $r_2 = 5$ and $r_4 = 5$, $\boldsymbol{G} = \{\{1, 2\}, \{3,4\}, \{5,6\}, \{7,8\}, \{9,10\}, \{11,12\}\}$; each row forms a uniform parallel class:
(5 11; 0), (4 10; 0), (3 9; 0), (2 6; 0), (7 12; 0), (1 8; 1),
(4 5; 1), (8 12; 0), (6 10; 1), (1 11; 0), (7 9; 1), (2 3; 0),
(6 8; 1), (9 11; 0), (2 4; 1), (7 10; 1), (1 5; 0), (3 12; 1),
(3 8; 0), (10 11; 0), (1 5; 1), (4 12; 0), (2 9; 0), (6 7; 1),
(5 10; 1), (1 11; 1), (4 6; 1), (2 3; 1), (7 12; 1), (8 9; 1),
(1 6 9 12; 1 1 1 0 0 0), (2 4 7 11; 0 0 0 0 0 0), (3 5 8 10; 1 1 1 0 0 0),
(2 5 8 12; 1 0 1 1 0 1), (3 6 9 11; 0 1 0 1 0 1), (1 4 7 10; 0 1 1 1 1 0),
(2 8 10 11; 1 0 1 1 0 1), (4 5 9 12; 0 0 1 0 1 1), (1 3 6 7; 1 0 0 1 1 0),
(2 5 7 9; 0 1 1 1 1 0), (4 6 8 11; 0 0 1 0 1 1), (1 3 10 12; 0 0 0 0 0 0),
(1 4 8 9; 1 0 0 1 1 0), (2 6 10 12; 1 1 0 0 1 1), (3 5 7 11; 0 0 1 0 1 1).
With Theorem 2.1 we obtain a $\text{URD}(\{2, 4\}; 24)$ with $r_2 = 5$.

Example A.16 A uniform $\{3, 5\}$-LRGDD_7 of type 3^5 with $r_3 = 38$ and $r_5 = 2$, $\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}, \{13, 14, 15\}\}$; each row forms a uniform parallel class:
(1 11 13; 4 5 1), (3 6 9; 1 6 5), (4 7 12; 0 3 3), (2 10 14; 6 2 3), (5 8 15; 4 1 4),
(2 9 15; 6 0 1), (1 7 12; 4 4 0), (5 8 14; 6 6 0), (3 6 11; 6 0 1), (4 10 13; 4 0 3),
(3 6 11; 2 4 2), (9 10 15; 3 6 3), (2 8 12; 1 3 2), (1 4 14; 2 5 3), (5 7 13; 1 1 0),
(5 7 10; 5 3 5), (3 6 13; 3 2 6), (4 8 14; 2 4 2), (2 9 11; 5 3 5), (1 12 15; 5 4 6),
(2 7 15; 0 3 3), (1 5 11; 0 2 2), (4 12 13; 1 1 0), (6 9 10; 2 3 1), (3 8 14; 2 6 4),
(3 7 15; 3 3 0), (2 5 10; 5 2 4), (9 11 13; 4 3 6), (6 8 12; 2 6 4), (1 4 14; 6 4 5),
(3 6 12; 0 1 1), (9 10 13; 5 2 4), (2 5 11; 3 2 6), (4 8 15; 5 5 0), (1 7 14; 0 0 0),
(2 11 13; 0 3 3), (8 12 14; 6 5 6), (3 4 9; 4 0 3), (1 5 7; 6 1 2), (6 10 15; 2 0 5),
(3 8 15; 3 4 1), (4 11 14; 3 0 4), (1 6 10; 5 4 6), (2 7 12; 4 5 1), (5 9 13; 2 0 5),
(1 8 13; 4 4 0), (3 4 7; 2 4 2), (2 6 12; 5 0 2), (9 10 14; 2 1 6), (5 11 15; 3 2 6),
(2 4 7; 3 1 5), (5 8 10; 3 6 3), (1 6 13; 3 1 5), (3 12 14; 5 2 4), (9 11 15; 0 3 3),
(3 6 15; 4 0 3), (1 7 14; 2 1 6), (2 8 10; 0 5 5), (4 11 13; 1 6 5), (5 9 12; 1 3 2),
(3 6 12; 5 3 5), (5 9 13; 6 6 0), (2 7 14; 3 6 3), (4 10 15; 5 0 2), (1 8 11; 2 6 4),
(2 9 13; 4 1 4), (3 5 12; 3 4 1), (7 11 15; 1 5 4), (1 4 8; 5 6 1), (6 10 14; 0 4 4),
(4 7 10; 1 0 6), (3 5 8; 0 0 0), (2 12 15; 1 1 0), (9 11 13; 1 1 0), (1 6 14; 0 2 2),
(1 6 15; 1 3 2), (2 4 9; 5 0 2), (7 10 13; 4 4 0), (5 8 12; 2 5 3), (3 11 14; 6 1 2),
(4 9 12; 5 4 6), (7 11 14; 6 5 6), (2 8 15; 2 4 2), (3 5 13; 2 0 5), (1 6 10; 4 2 5),
(6 9 14; 4 0 3), (1 4 11; 1 0 6), (2 5 15; 0 6 6), (8 12 13; 5 3 5), (3 7 10; 1 2 1),
(3 12 14; 2 5 3), (6 8 15; 5 1 3), (1 9 11; 6 1 2), (2 5 13; 6 2 3), (4 7 10; 6 6 0),
(9 12 14; 4 4 0), (2 6 13; 1 4 3), (3 8 10; 1 5 4), (1 5 11; 3 3 0), (4 7 15; 4 1 4),
(7 12 13; 2 3 1), (2 10 14; 4 4 0), (1 4 9; 0 0 0), (6 8 11; 6 4 5), (3 5 15; 1 5 4),
(3 7 14; 5 0 2), (4 9 11; 4 0 3), (5 12 15; 6 3 4), (1 10 13; 5 6 1), (2 6 8; 6 3 4),
(2 8 11; 4 6 2), (6 9 14; 3 1 5), (1 12 15; 1 2 1), (5 7 10; 3 5 2), (3 4 13; 6 1 2),
(3 7 12; 2 0 5), (2 4 9; 1 2 1), (1 8 15; 3 1 5), (6 10 13; 4 2 5), (5 11 14; 1 2 1),
(3 9 13; 5 4 6), (4 8 10; 3 3 0), (2 5 15; 4 2 5), (1 12 14; 2 3 1), (6 7 11; 2 0 5),
(5 12 14; 0 5 5), (2 7 11; 2 5 3), (6 8 13; 0 1 1), (1 10 15; 1 0 6), (3 4 9; 5 4 6),
(6 7 14; 5 6 1), (3 5 9; 5 1 3), (4 12 15; 2 4 2), (1 8 10; 5 6 1), (2 11 13; 4 6 2),
(1 5 9; 1 1 0), (3 10 15; 1 1 0), (4 8 14; 0 1 1), (6 12 13; 4 0 3), (2 7 11; 6 1 2),
(3 10 13; 0 6 6), (6 7 11; 1 5 4), (4 8 15; 4 3 6), (1 9 12; 4 0 3), (2 5 14; 2 3 1),
(2 4 14; 2 1 6), (6 7 13; 6 4 5), (3 11 15; 1 6 5), (5 8 10; 1 0 6), (1 9 12; 5 6 1),
(5 11 14; 5 3 5), (1 6 8; 6 0 1), (3 7 13; 6 5 6), (2 4 12; 6 4 5), (9 10 15; 6 0 1),
(1 8 13; 1 3 2), (3 4 11; 0 5 5), (5 12 15; 4 0 3), (2 6 9; 3 3 0), (7 10 14; 3 4 1),
(1 10 13; 0 2 2), (3 8 12; 5 6 1), (4 11 15; 2 2 0), (2 5 7; 1 5 4), (6 9 14; 6 5 6),
(6 7 12; 4 3 6), (1 5 9; 5 2 4), (4 11 15; 4 6 2), (2 10 14; 3 5 2), (3 8 13; 6 3 4),
(1 5 10; 2 3 1), (3 7 15; 0 2 2), (2 4 13; 4 0 3), (9 12 14; 5 0 2), (6 8 11; 3 6 3),
(8 11 14; 0 3 3), (5 7 13; 0 2 2), (2 6 12; 2 2 0), (3 4 10; 1 3 2), (1 9 15; 3 5 2),
(5 12 13; 2 4 2), (6 7 15; 0 6 6), (1 4 14; 4 6 2), (2 8 10; 5 0 2), (3 9 11; 3 2 6),
(9 12 15; 0 5 5), (2 6 14; 4 0 3), (3 4 10; 3 4 1), (8 11 13; 1 5 4), (1 5 7; 4 3 6),
(1 6 7 11 15; 2 5 5 6 3 3 4 0 1 1), (2 4 8 12 13; 0 6 6 5 6 6 5 0 6 6), (3 5 9 10 14; 4 2 6 4 5 2 0 4 2 5),
(3 5 8 11 14; 6 4 3 3 5 4 4 6 6 0), (1 4 7 12 13; 3 6 3 0 3 0 4 4 1 4), (2 6 9 10 15; 0 1 1 5 1 1 5 0 4 4).

Example A.17 A uniform $\{3, 5\}$-LRGDD$_7$ of type 3^5 with $r_3 = 36$ and $r_5 = 3$, $\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}, \{13, 14, 15\}\}$; each row forms a uniform parallel class:

(1 5 15; 6 3 4), (6 8 12; 3 0 4), (2 7 10; 2 6 4), (9 11 13; 1 3 2), (3 4 14; 1 5 4),
(6 10 14; 2 3 1), (9 12 13; 3 2 6), (1 7 15; 0 1 1), (3 5 8; 4 0 3), (2 4 11; 4 0 3),
(4 10 13; 3 0 4), (1 7 12; 4 5 1), (2 11 15; 4 3 6), (6 9 14; 6 2 3), (3 5 8; 3 5 2),
(4 7 13; 2 2 0), (1 5 11; 0 2 2), (2 12 14; 4 6 2), (6 8 15; 2 4 2), (3 9 10; 5 4 6),
(1 9 12; 4 4 0), (3 4 14; 5 0 2), (5 8 11; 1 3 2), (2 6 13; 3 0 4), (7 10 15; 6 0 1),
(1 7 15; 3 2 6), (2 5 9; 6 0 1), (6 11 13; 1 0 6), (8 10 14; 5 3 5), (3 4 12; 6 4 5),
(4 7 15; 3 0 4), (1 6 10; 3 6 3), (2 12 14; 2 3 1), (5 9 11; 2 6 4), (3 8 13; 4 2 5),
(3 8 15; 6 5 6), (1 4 11; 3 3 0), (6 12 14; 2 5 3), (2 7 13; 6 2 3), (5 9 10; 5 0 2),
(1 7 11; 5 5 0), (9 10 14; 3 6 3), (3 6 13; 0 3 3), (2 5 15; 5 4 6), (4 8 12; 2 2 0),
(3 4 12; 2 1 6), (6 9 13; 1 2 1), (7 10 14; 1 0 6), (2 5 11; 0 1 1), (1 8 15; 4 5 1),
(1 6 14; 4 5 1), (2 4 8; 2 1 6), (3 5 10; 0 6 6), (7 12 15; 0 3 3), (9 11 13; 6 0 1),
(2 9 15; 3 5 2), (3 6 12; 5 3 5), (4 7 10; 1 4 3), (1 5 13; 4 5 1), (8 11 14; 3 0 4),
(6 7 11; 5 0 2), (1 5 13; 1 4 3), (3 4 15; 3 2 6), (2 8 10; 2 2 0), (9 12 14; 5 2 4),
(2 8 14; 4 2 5), (5 11 13; 0 4 4), (3 4 7; 0 6 6), (1 9 12; 0 2 2), (6 10 15; 0 0 0),
(7 11 14; 1 3 2), (3 9 15; 2 1 6), (2 5 12; 3 0 4), (1 4 10; 0 5 5), (6 8 13; 6 1 2),
(6 8 11; 5 6 1), (3 10 13; 1 4 3), (5 9 15; 3 1 5), (2 7 12; 1 6 5), (1 4 14; 2 3 1),
(3 6 7; 2 4 2), (2 11 14; 2 1 6), (1 9 10; 2 3 1), (4 8 13; 1 5 4), (5 12 15; 0 2 2),
(3 9 15; 3 3 0), (1 5 14; 2 1 6), (8 12 13; 1 1 0), (4 7 10; 4 2 5), (2 6 11; 2 5 3),
(2 5 9; 4 1 4), (1 8 10; 0 2 2), (3 11 13; 3 1 5), (4 12 15; 0 4 4), (6 7 14; 6 4 5),
(7 12 13; 2 4 2), (3 5 8; 6 3 4), (2 11 15; 6 0 1), (4 9 10; 3 0 4), (1 6 14; 0 0 0),
(2 4 15; 6 1 2), (5 12 14; 2 2 0), (1 6 9; 1 3 2), (8 11 13; 0 3 3), (3 7 10; 5 5 0),
(3 7 11; 1 6 5), (5 10 14; 4 1 4), (6 8 15; 0 3 3), (1 12 13; 3 1 5), (2 4 9; 3 4 1),
(1 11 14; 4 4 0), (3 5 7; 5 0 2), (4 10 13; 1 3 2), (2 8 12; 6 1 2), (6 9 15; 5 6 1),
(5 7 12; 3 6 3), (3 11 13; 5 5 0), (1 8 15; 3 0 4), (2 6 10; 5 4 6), (4 9 14; 6 6 0),
(8 10 14; 1 1 0), (6 9 12; 3 4 1), (2 5 7; 1 0 6), (3 11 15; 0 0 0), (1 4 13; 5 6 1),
(3 6 11; 4 2 5), (2 7 13; 5 6 1), (1 10 14; 4 6 2), (5 8 15; 5 3 5), (4 9 12; 4 1 4),
(4 9 12; 5 4 6), (2 6 14; 1 0 6), (1 10 15; 0 6 6), (5 7 11; 0 4 4), (3 8 13; 1 0 6),
(2 5 12; 2 5 3), (6 7 11; 1 4 3), (8 10 15; 4 0 3), (3 9 14; 1 2 1), (1 4 13; 4 3 6),
(2 4 14; 0 5 5), (7 11 15; 6 2 3), (1 8 12; 5 1 3), (5 9 13; 0 5 5), (3 6 10; 1 2 1),
(1 4 7; 6 6 0), (3 5 10; 1 3 2), (2 9 13; 5 4 6), (8 11 14; 4 2 5), (6 12 15; 1 2 1),
(5 10 15; 3 5 2), (2 4 8; 5 3 5), (1 9 11; 5 1 3), (3 7 14; 2 1 6), (6 12 13; 3 6 3),
(5 10 13; 1 0 6), (4 12 15; 3 1 5), (3 9 11; 4 4 0), (2 6 8; 6 0 1), (1 7 14; 1 2 1),
(5 7 14; 5 0 2), (4 8 10; 3 6 3), (1 6 11; 5 0 2), (2 9 13; 6 3 4), (3 12 15; 6 6 0),
(5 11 15; 5 0 2), (3 12 14; 5 3 5), (1 6 8; 2 6 4), (2 9 10; 2 0 5), (4 7 13; 5 4 6),
(2 10 13; 3 1 5), (5 9 14; 6 3 4), (4 11 15; 1 5 4), (1 8 12; 1 0 6), (3 6 7; 6 3 4),
(5 7 14; 1 5 4), (1 6 9; 6 6 0), (2 10 15; 1 6 5), (4 8 11; 0 6 6), (3 12 13; 2 6 4),
(3 4 9 11 14; 4 6 1 4 2 4 0 2 5 3), (2 6 7 12 15; 4 4 3 2 0 6 5 6 5 6), (1 5 8 10 13; 3 2 1 2 6 5 6 6 0 1),
(3 6 9 10 15; 3 0 0 4 4 4 1 0 4 4), (1 5 7 12 13; 5 2 6 0 4 1 2 4 5 1), (2 4 8 11 14; 1 5 3 4 4 2 3 5 6 1),
(2 6 7 10 13; 0 3 5 5 3 5 5 2 2 0), (1 4 9 11 15; 1 1 6 4 0 5 3 5 3 5), (3 5 8 12 14; 2 2 0 6 0 5 4 5 4 6).

Example A.18 A uniform $\{3, 5\}$-LRGDD$_7$ of type 3^5 with $r_3 = 34$ and $r_5 = 4$, $\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}, \{13, 14, 15\}\}$; each row forms a uniform parallel class:

(1 5 13; 4 3 6), (3 8 11; 2 3 1), (6 9 10; 6 0 1), (2 12 15; 1 6 5), (4 7 14; 1 2 1),
(7 12 15; 6 5 6), (4 11 13; 5 3 5), (2 9 10; 6 2 3), (1 5 14; 3 0 4), (3 6 8; 6 4 5),
(3 5 9; 4 1 4), (4 7 11; 3 0 4), (6 10 15; 6 1 2), (2 12 13; 4 1 4), (1 8 14; 6 5 6),
(3 4 9; 0 5 5), (6 10 14; 5 4 6), (1 11 13; 1 1 0), (2 8 15; 6 2 3), (5 7 12; 0 4 4),
(4 9 14; 3 4 1), (2 7 15; 2 3 1), (1 6 12; 0 4 4), (3 11 13; 4 5 1), (5 8 10; 0 4 4),
(3 11 14; 1 5 4), (5 9 13; 3 0 4), (4 8 12; 5 1 3), (2 7 10; 1 1 0), (1 6 15; 6 2 3),
(3 6 8; 0 1 1), (1 10 15; 2 0 5), (2 7 13; 6 3 4), (4 12 14; 6 6 0), (5 9 11; 2 2 0),
(5 12 15; 5 1 3), (1 6 8; 5 4 6), (2 4 10; 0 5 5), (3 7 13; 0 1 1), (9 11 14; 4 2 5),
(6 11 13; 4 6 2), (3 5 7; 5 1 3), (4 9 14; 1 0 6), (2 10 15; 3 4 1), (1 8 12; 1 1 0),
(3 4 7; 6 6 0), (5 10 14; 2 0 5), (2 12 15; 0 0 0), (1 6 9; 1 4 3), (8 11 13; 5 4 6),
(3 9 12; 2 5 3), (2 6 14; 2 5 3), (1 7 13; 0 6 6), (5 11 15; 5 0 2), (4 8 10; 2 2 0),
(3 4 10; 3 4 1), (6 9 12; 2 1 6), (7 11 14; 1 2 1), (1 8 15; 2 3 1), (2 5 13; 3 5 2),
(9 11 15; 6 4 5), (2 6 8; 1 4 3), (5 7 10; 6 1 2), (3 12 13; 3 6 3), (1 4 14; 6 4 5),
(8 10 13; 1 5 4), (2 5 14; 5 6 1), (3 6 7; 3 2 6), (1 4 12; 2 0 5), (9 11 15; 2 3 1),
(6 10 14; 4 1 4), (5 9 11; 5 1 3), (2 4 15; 2 1 6), (1 7 12; 3 6 3), (3 8 13; 5 4 6),
(2 6 9; 6 3 4), (3 4 13; 5 0 2), (5 7 12; 2 2 0), (1 11 15; 0 6 6), (8 10 14; 3 4 1),
(2 4 8; 3 3 0), (3 10 14; 2 4 2), (6 7 12; 1 6 5), (9 11 15; 5 5 0), (1 5 13; 6 4 5),
(9 12 13; 2 1 6), (2 5 8; 2 1 6), (1 4 11; 0 4 4), (7 10 15; 6 2 3), (3 6 14; 1 1 0),

(3 6 7; 4 4 0), (2 11 13; 2 6 4), (4 9 10; 6 4 5), (1 5 15; 5 1 3), (8 12 14; 4 5 1),
(6 7 15; 5 5 0), (3 12 14; 2 0 5), (1 9 10; 6 5 6), (2 4 11; 4 3 6), (5 8 13; 1 4 3),
(2 7 11; 4 4 0), (3 4 15; 1 2 1), (8 12 14; 6 3 4), (1 5 9; 0 1 1), (6 10 13; 2 0 5),
(3 4 12; 4 1 4), (9 10 13; 4 6 2), (5 7 15; 5 2 4), (1 6 11; 3 6 3), (2 8 14; 2 3 1),
(4 12 15; 2 3 1), (2 7 10; 5 6 1), (1 9 14; 0 3 3), (3 6 11; 5 6 1), (5 8 13; 2 3 1),
(3 4 13; 2 2 0), (6 9 12; 0 5 5), (8 11 15; 2 5 3), (1 7 10; 5 1 3), (2 5 14; 1 4 3),
(1 10 13; 3 2 6), (6 8 15; 4 4 0), (2 9 11; 0 1 1), (3 5 12; 6 6 0), (4 7 14; 4 1 4),
(6 7 13; 3 1 5), (1 8 12; 3 5 2), (5 9 14; 0 5 5), (3 10 15; 1 0 6), (2 4 11; 5 0 2),
(4 8 15; 6 5 6), (7 12 13; 2 3 1), (2 6 11; 0 6 6), (3 5 10; 1 0 6), (1 9 14; 2 6 4),
(1 7 14; 2 1 6), (6 12 13; 3 3 0), (3 9 15; 4 3 6), (2 5 10; 0 0 0), (4 8 11; 4 1 4),
(6 10 15; 3 0 4), (3 8 11; 6 5 6), (1 5 12; 1 2 1), (4 7 13; 2 4 2), (2 9 14; 2 2 0),
(3 12 14; 0 3 3), (2 9 13; 4 2 5), (1 6 15; 2 4 2), (4 7 11; 5 3 5), (5 8 10; 5 3 5),
(1 5 11; 2 5 3), (3 9 10; 6 6 0), (7 12 14; 1 0 6), (6 8 13; 0 2 2), (2 4 15; 1 5 4),
(5 9 15; 6 6 0), (2 8 12; 5 6 1), (1 4 7; 5 4 6), (6 11 13; 2 5 3), (3 10 14; 3 6 3),
(1 7 10; 1 6 5), (4 8 15; 3 0 4), (2 5 12; 4 3 6), (3 9 13; 3 3 0), (6 11 14; 0 6 6),
(3 7 15; 5 4 6), (2 6 9; 4 5 1), (4 10 14; 3 3 0), (5 12 13; 3 1 5), (1 8 11; 0 3 3),
(2 6 8 12 14; 5 0 5 0 2 0 2 5 0 2), (3 5 7 11 15; 2 3 2 6 1 0 4 6 3 4), (1 4 9 10 13; 1 5 0 0 4 6 6 2 2 0),
(1 4 9 12 15; 3 3 3 5 0 0 2 0 2 2), (3 5 8 11 14; 3 0 0 2 4 4 6 0 2 2), (2 6 7 10 13; 3 0 4 0 4 1 4 4 0 3),
(2 5 7 11 14; 6 3 5 1 4 6 2 2 5 3), (1 4 8 10 13; 4 5 4 5 1 0 1 6 0 1), (3 6 9 12 15; 2 0 4 1 5 2 6 4 1 4),
(2 4 9 12 13; 6 1 2 4 2 3 5 1 3 2), (1 6 7 11 14; 4 6 2 2 2 5 5 3 3 0), (3 5 8 10 15; 0 3 5 5 3 5 5 2 2 0).

Example A.19 A uniform $\{3, 5\}$-LRGDD_7 of type 3^5 with $r_3 = 32$ and $r_5 = 5$, $\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}, \{13, 14, 15\}\}$; each row forms a uniform parallel class:

(3 9 14; 6 1 2), (8 12 15; 6 3 4), (5 11 13; 5 4 6), (2 4 7; 6 2 3), (1 6 10; 1 5 4),
(6 8 15; 5 2 4), (3 11 14; 3 3 0), (4 9 10; 4 1 4), (2 7 13; 4 1 4), (1 5 12; 1 0 6),
(6 10 14; 5 2 4), (2 4 15; 5 2 4), (5 9 11; 5 6 1), (3 8 12; 3 6 3), (1 7 13; 0 6 6),
(2 4 9; 4 4 0), (6 7 11; 0 4 4), (3 8 13; 4 2 5), (1 12 15; 2 0 5), (5 10 14; 3 3 0),
(4 7 10; 1 4 3), (2 6 15; 3 1 5), (3 9 12; 1 4 3), (5 11 13; 1 6 5), (1 8 14; 2 3 1),
(1 6 12; 4 1 4), (9 10 13; 6 1 2), (2 7 11; 3 2 6), (3 4 14; 5 4 6), (5 8 15; 6 0 1),
(1 4 10; 3 3 0), (3 11 15; 6 3 4), (6 9 14; 6 4 5), (7 12 13; 1 1 0), (2 5 8; 1 4 3),
(2 9 10; 3 4 1), (3 4 15; 6 0 1), (6 7 11; 4 6 2), (5 12 14; 2 0 5), (1 8 13; 6 0 1),
(4 10 13; 2 5 3), (2 6 8; 4 5 1), (1 7 14; 5 4 6), (5 9 11; 0 0 0), (3 12 15; 3 2 6),
(6 7 14; 1 1 0), (9 12 13; 6 3 4), (1 5 10; 4 4 0), (3 4 15; 1 6 5), (2 8 11; 3 1 5),
(4 7 13; 5 3 5), (2 10 14; 5 1 3), (1 5 12; 0 3 3), (3 6 8; 4 6 2), (9 11 15; 4 4 0),
(8 10 14; 4 2 5), (1 7 15; 3 3 0), (2 6 9; 6 1 2), (3 4 11; 0 2 2), (5 12 13; 5 0 2),
(2 10 14; 0 2 2), (5 9 15; 6 2 3), (1 6 13; 3 3 0), (4 7 11; 0 0 0), (3 8 12; 2 2 0),
(4 8 14; 5 5 0), (7 10 15; 5 4 6), (2 6 12; 1 3 2), (1 9 13; 0 4 4), (3 5 11; 5 1 3),
(6 9 14; 4 3 6), (3 7 10; 3 3 0), (4 12 15; 6 0 1), (1 8 11; 0 6 6), (2 5 13; 3 6 3),
(8 12 14; 2 4 2), (2 4 9; 0 6 6), (6 7 11; 6 0 1), (3 5 13; 6 0 1), (1 10 15; 6 1 2),
(2 10 14; 6 0 1), (3 6 8; 3 0 4), (1 11 13; 5 5 0), (5 7 15; 0 1 1), (4 9 12; 2 0 5),
(3 11 13; 4 6 2), (2 9 12; 2 4 2), (5 7 14; 5 2 4), (1 6 10; 0 0 0), (4 8 15; 0 2 2),
(4 10 15; 5 3 5), (3 5 7; 1 2 1), (2 11 13; 4 5 1), (6 8 14; 3 6 3), (1 9 12; 6 6 0),
(4 9 13; 1 0 6), (5 12 14; 0 4 4), (2 7 15; 5 3 5), (1 8 10; 5 1 3), (3 6 11; 2 5 3),
(3 9 14; 2 2 0), (1 6 15; 5 6 1), (2 5 12; 4 1 4), (4 8 11; 4 5 1), (7 10 13; 1 2 1),
(3 6 15; 1 1 0), (1 7 13; 6 2 3), (2 11 14; 6 4 5), (5 9 10; 1 4 3), (4 8 12; 3 1 5),
(3 6 9; 0 3 3), (1 4 11; 2 1 6), (7 12 14; 3 2 6), (8 10 15; 0 0 0), (2 5 13; 5 0 2),
(3 7 10; 0 6 6), (9 11 15; 5 6 1), (2 5 8; 6 6 0), (6 12 13; 6 5 6), (1 4 14; 1 5 4),
(6 12 14; 5 5 0), (2 5 8; 2 0 5), (3 9 10; 0 5 5), (4 11 13; 1 4 3), (1 7 15; 1 4 3),
(6 7 12; 3 1 5), (3 8 10; 1 0 6), (2 9 13; 5 3 5), (4 11 15; 4 6 2), (1 5 14; 5 6 1),
(5 9 10; 2 2 0), (8 11 14; 4 5 1), (1 4 7; 5 2 4), (3 6 13; 6 3 4), (2 12 15; 0 0 0),
(6 10 13; 6 3 4), (1 5 8; 3 4 1), (9 11 15; 2 5 3), (2 7 12; 1 5 4), (3 4 14; 4 5 1),
(2 4 11; 2 5 3), (6 7 12; 5 0 2), (5 8 13; 2 5 3), (3 10 15; 4 5 1), (1 9 14; 1 2 1),
(5 7 15; 4 6 2), (2 11 14; 0 6 6), (4 8 10; 1 6 5), (3 9 13; 5 5 0), (1 6 12; 2 5 3),
(6 9 15; 1 3 2), (2 4 14; 1 3 2), (3 5 10; 4 2 5), (1 7 11; 4 2 5), (8 12 13; 1 4 3),
(6 10 13; 3 1 5), (3 5 7; 3 6 3), (8 11 14; 3 6 3), (2 12 15; 2 4 2), (1 4 9; 4 2 5),
(1 4 8 10 13; 6 1 2 1 2 3 2 1 0 6), (3 5 9 12 15; 0 4 1 4 4 1 4 4 0 3), (2 6 7 11 14; 5 0 3 5 2 5 0 3 5 2),
(3 4 7 12 13; 2 1 0 1 6 5 6 6 0 1), (1 5 9 11 14; 2 5 4 1 3 2 6 6 3 4), (2 6 8 10 15; 2 1 3 6 6 1 4 2 5 3),
(1 5 8 11 15; 6 3 3 2 4 4 3 0 6 6), (2 6 9 10 13; 0 0 2 2 0 2 2 2 2 0), (3 4 7 12 14; 3 5 5 6 2 2 3 0 1 1),
(1 6 9 11 15; 6 4 0 5 5 1 6 3 1 5), (2 4 8 12 13; 3 2 6 4 6 3 1 4 2 5), (3 5 7 10 14; 2 4 1 0 2 6 5 4 3 6),
(3 6 8 11 13; 5 5 0 4 0 2 6 2 6 4), (2 5 7 10 15; 0 6 1 5 6 1 5 2 6 4), (1 4 9 12 14; 0 3 4 0 3 4 0 1 4 3).

Example A.20 A uniform $\{3, 4\}$-LRGDD_4 of type 3^4 with $r_3 = 15$ and $r_4 = 2$, $\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}\}$; each row forms a uniform parallel class:

(2 4 7; 0 2 2), (3 5 12; 1 2 1), (6 9 11; 0 1 1), (1 8 10; 3 0 1),
(2 5 12; 0 0 0), (1 8 11; 1 0 3), (3 6 9; 1 0 3), (4 7 10; 3 2 3),
(2 4 11; 1 1 0), (3 5 9; 3 3 0), (6 8 10; 1 0 3), (1 7 12; 2 2 0),
(2 5 10; 2 2 0), (3 9 11; 1 1 0), (4 8 12; 0 3 3), (1 6 7; 0 3 3),
(2 9 12; 3 1 2), (1 4 10; 2 3 1), (3 6 8; 3 3 0), (5 7 11; 3 2 3),
(1 5 10; 0 1 1), (2 6 8; 2 1 3), (3 7 12; 1 3 2), (4 9 11; 0 3 3),
(1 4 9; 3 2 3), (2 5 11; 1 2 1), (3 7 10; 0 2 2), (6 8 12; 2 2 0),
(2 8 11; 3 0 1), (3 4 7; 3 3 0), (5 9 12; 1 2 1), (1 6 10; 3 2 3),
(2 6 11; 3 3 0), (1 5 7; 2 0 2), (3 9 10; 2 3 1), (4 8 12; 2 0 2),
(3 4 11; 1 3 2), (2 5 8; 3 0 1), (6 7 10; 1 2 1), (1 9 12; 0 3 3),
(2 7 10; 0 0 0), (1 5 8; 1 0 3), (3 6 11; 2 0 2), (4 9 12; 2 2 0),
(3 5 8; 0 2 2), (1 4 12; 0 1 1), (6 7 11; 2 3 1), (2 9 10; 1 3 2),
(2 8 12; 2 3 1), (1 6 9; 2 3 1), (3 4 10; 0 0 0), (5 7 11; 1 3 2),
(3 6 12; 0 0 0), (2 4 9; 3 0 1), (1 7 11; 1 1 0), (5 8 10; 0 2 2),
(2 4 7; 2 3 1), (1 6 12; 1 0 3), (3 8 11; 0 2 2), (5 9 10; 3 3 0),
(1 5 9 11; 3 1 3 2 0 2), (2 6 7 12; 1 1 2 0 1 1), (3 4 8 10; 2 1 1 3 3 0),
(1 4 8 11; 1 2 2 1 1 0), (2 6 9 10; 0 2 1 2 1 3), (3 5 7 12; 2 2 1 0 3 3).

Example A.21 A uniform $\{3, 4\}$-LRGDD$_4$ of type 3^4 with $r_3 = 12$ and $r_4 = 4$,
$\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}\}$; each row forms a uniform parallel class:
(1 6 12; 2 1 3), (2 8 11; 3 0 1), (5 7 10; 3 1 2), (3 4 9; 1 3 2),
(1 4 12; 0 0 0), (3 5 8; 1 0 3), (6 7 10; 3 0 1), (2 9 11; 0 2 2),
(3 8 11; 1 0 3), (2 5 10; 2 0 2), (6 9 12; 1 2 1), (1 4 7; 1 1 0),
(6 9 11; 3 2 3), (1 4 10; 3 0 1), (2 5 8; 0 2 2), (3 7 12; 0 3 3),
(6 8 11; 2 0 2), (2 4 9; 2 2 0), (1 5 10; 1 1 0), (3 7 12; 1 2 1),
(1 4 8; 2 2 0), (3 7 12; 2 0 2), (2 6 10; 1 2 1), (5 9 11; 1 1 0),
(2 6 7; 2 3 1), (3 4 11; 3 1 2), (5 9 12; 2 0 2), (1 8 10; 3 2 3),
(1 9 12; 2 2 0), (4 7 10; 2 2 0), (3 6 8; 3 3 0), (2 5 11; 1 1 0),
(2 6 12; 3 3 0), (4 8 10; 1 3 2), (3 5 9; 2 2 0), (1 7 11; 2 3 1),
(2 8 10; 1 1 0), (4 7 11; 3 3 0), (3 6 12; 0 1 1), (1 5 9; 2 1 3),
(4 8 12; 2 1 3), (2 6 7; 0 2 2), (3 5 11; 0 2 2), (1 9 10; 3 3 0),
(3 4 11; 2 3 1), (1 6 7; 3 3 0), (2 9 10; 1 3 2), (5 8 12; 0 1 1),
(1 5 7 11; 3 0 2 1 3 2), (2 4 9 12; 0 3 2 3 2 3), (3 6 8 10; 1 2 3 1 2 1),
(3 6 9 10; 2 0 1 2 3 1), (2 4 7 11; 3 0 3 1 0 3), (1 5 8 12; 0 1 3 1 3 2),
(2 4 8 12; 1 0 0 3 3 0), (3 5 7 10; 3 3 2 0 3 3), (1 6 9 11; 0 0 1 0 1 1),
(3 4 9 10; 0 1 0 1 0 3), (2 5 7 12; 3 1 1 2 2 0), (1 6 8 11; 1 0 0 3 3 0).

Example A.22 A uniform $\{3, 4\}$-LRGDD$_4$ of type 3^4 with $r_3 = 9$ and $r_4 = 6$,
$\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}\}$; each row forms a uniform parallel class:
(2 4 7; 1 3 2), (3 9 11; 0 1 1), (1 5 10; 3 1 2), (6 8 12; 2 0 2),
(1 8 12; 2 3 1), (6 7 11; 1 2 1), (3 4 10; 2 0 2), (2 5 9; 2 2 0),
(5 8 11; 3 0 1), (2 7 10; 0 1 1), (1 6 12; 1 2 1), (3 4 9; 1 2 1),
(2 8 11; 3 2 3), (3 5 12; 3 1 2), (4 9 10; 2 3 1), (1 6 7; 2 0 2),
(6 9 11; 1 0 3), (1 5 7; 2 1 3), (2 4 12; 2 3 1), (3 8 10; 1 1 0),
(4 7 12; 0 0 0), (3 5 11; 1 0 3), (2 6 8; 1 2 1), (1 9 10; 0 3 3),
(2 6 10; 2 3 1), (4 8 12; 2 2 0), (3 7 11; 0 3 3), (1 5 9; 0 3 3),
(1 7 12; 3 1 2), (2 6 11; 0 3 3), (5 9 10; 1 1 0), (3 4 8; 0 3 3),
(5 7 10; 2 0 2), (2 9 12; 0 0 0), (1 4 11; 3 3 0), (3 6 8; 0 0 0),
(3 6 7 12; 2 1 0 3 2 3), (2 5 8 10; 3 0 2 1 3 2), (1 4 9 11; 2 1 1 3 3 0),
(2 5 9 12; 1 3 1 2 0 2), (1 4 8 11; 0 0 2 0 2 2), (3 6 7 10; 3 3 2 0 3 3),

(1 5 8 12; 1 1 0 0 3 3), (3 6 9 10; 1 1 3 0 2 2), (2 4 7 11; 3 2 0 3 1 2),
(1 6 8 10; 0 3 0 3 0 1), (2 5 7 11; 0 1 1 1 1 0), (3 4 9 12; 3 3 2 0 3 3),
(3 5 7 12; 2 2 3 0 1 1), (1 6 9 11; 3 2 0 3 1 2), (2 4 8 10; 0 1 0 1 0 3),
(2 6 9 12; 3 1 2 2 3 1), (3 5 8 11; 0 2 2 2 2 0), (1 4 7 10; 1 2 2 1 1 0).

Example A.23 A uniform $\{3, 4\}$-LRGDD$_4$ of type 3^4 with $r_3 = 6$ and $r_4 = 8$, $\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}\}$; each row forms a uniform parallel class:
(3 8 11; 2 1 3), (4 9 10; 0 1 1), (1 5 7; 2 3 1), (2 6 12; 1 3 2),
(3 4 8; 3 0 1), (5 9 12; 2 3 1), (1 6 11; 3 0 1), (2 7 10; 0 2 2),
(3 4 12; 1 1 0), (6 7 11; 0 0 0), (2 5 9; 2 3 1), (1 8 10; 1 3 2),
(1 7 12; 2 0 2), (2 6 9; 2 1 3), (5 8 10; 1 1 0), (3 4 11; 0 0 0),
(3 9 11; 3 2 3), (2 5 10; 0 0 0), (1 4 7; 1 0 3), (6 8 12; 0 3 3),
(2 9 12; 0 2 2), (3 6 8; 0 1 1), (4 7 11; 1 2 1), (1 5 10; 1 0 3),
(1 6 8 10; 1 0 1 3 0 1), (3 5 9 12; 2 2 2 0 0 0), (2 4 7 11; 1 3 2 2 1 3),
(3 6 9 10; 1 1 3 0 2 2), (2 4 7 12; 2 2 1 0 3 3), (1 5 8 11; 0 3 1 3 1 2),
(2 6 7 10; 0 1 1 1 1 0), (3 5 8 12; 3 3 0 0 1 1), (1 4 9 11; 3 2 2 3 3 0),
(3 4 9 10; 2 0 0 2 2 0), (1 5 7 12; 3 1 1 2 2 0), (2 6 8 11; 3 1 1 2 2 0),
(1 4 8 12; 0 2 2 2 2 0), (3 6 7 10; 2 0 1 2 3 1), (2 5 9 11; 3 2 3 3 0 1),
(3 6 7 12; 3 2 3 3 0 1), (1 4 9 10; 2 3 2 1 0 3), (2 5 8 11; 1 3 0 2 3 1),
(1 6 9 12; 2 0 3 2 1 3), (3 5 7 11; 1 1 3 0 2 2), (2 4 8 10; 0 0 3 0 3 3),
(1 6 9 11; 0 1 3 1 3 2), (3 5 7 10; 0 3 2 3 2 3), (2 4 8 12; 3 2 0 3 1 2).

Example A.24 A uniform $\{3, 4\}$-LRGDD$_{12}$ of type 3^4 with $r_3 = 18$ and $r_4 = 24$, $\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}\}$; each row forms a uniform parallel class:
(5 9 12; 4 0 8), (3 6 11; 5 10 5), (1 4 7; 7 7 0), (2 8 10; 4 5 1),
(3 4 12; 4 1 9), (2 6 7; 10 5 7), (1 8 10; 1 3 2), (5 9 11; 6 4 10),
(5 7 12; 11 5 6), (1 4 11; 9 1 4), (2 6 8; 0 8 8), (3 9 10; 11 6 7),
(2 6 10; 4 7 3), (3 8 12; 4 10 6), (4 9 11; 5 11 6), (1 5 7; 2 8 6),
(4 9 12; 0 6 6), (1 8 11; 10 6 8), (2 5 7; 4 6 2), (3 6 10; 11 0 1),
(4 8 10; 7 3 8), (1 5 9; 5 6 1), (2 7 12; 1 2 1), (3 6 11; 3 2 11),
(2 7 11; 0 10 10), (5 8 10; 3 6 3), (1 4 12; 10 9 11), (3 6 9; 8 0 4),
(4 7 11; 6 7 1), (3 5 9; 11 8 9), (1 6 10; 7 9 2), (2 8 12; 10 10 0),
(1 5 12; 9 10 1), (3 7 10; 5 2 9), (2 4 9; 8 4 8), (6 8 11; 5 7 2),
(2 5 11; 10 11 1), (1 9 12; 3 7 4), (3 4 7; 10 0 2), (6 8 10; 1 0 11),
(1 4 8; 2 8 6), (2 7 11; 7 4 9), (6 9 10; 11 4 5), (3 5 12; 0 11 11),
(2 6 12; 8 5 9), (3 4 8; 8 11 3), (5 7 10; 9 4 7), (1 9 11; 4 8 4),
(3 9 12; 1 8 7), (2 5 8; 9 7 10), (1 4 10; 3 5 2), (6 7 11; 2 8 6),
(2 6 9; 3 0 9), (5 8 11; 2 5 3), (3 7 12; 4 0 8), (1 4 10; 8 2 6),
(2 5 11; 1 9 8), (3 4 8; 9 5 8), (6 9 12; 0 5 5), (1 7 10; 10 8 10),
(3 5 11; 5 3 10), (2 9 10; 9 3 6), (1 6 8; 3 0 9), (4 7 12; 4 8 4),
(1 5 9; 4 7 3), (3 8 11; 6 1 7), (6 7 10; 3 9 6), (2 4 12; 7 0 5),
(4 8 12; 1 3 2), (3 6 7; 4 2 10), (1 9 11; 0 7 7), (2 5 10; 8 6 10),
(1 6 9 11; 10 1 4 3 6 3), (2 4 8 10; 3 0 0 9 9 0), (3 5 7 12; 8 3 5 7 9 2),
(1 4 7 11; 0 11 3 11 3 4), (2 6 8 12; 7 5 6 10 11 1), (3 5 9 10; 3 5 4 2 1 11),
(1 5 7 11; 7 0 2 5 7 2), (2 4 8 12; 9 1 4 4 7 3), (3 6 9 10; 9 3 3 6 6 0),
(2 6 7 12; 5 9 7 4 2 10), (1 4 9 10; 5 9 10 4 5 1), (3 5 8 11; 6 10 8 4 2 10),
(1 6 9 11; 0 8 9 8 9 1), (3 4 7 12; 1 8 3 7 2 7), (2 5 8 10; 11 11 8 0 9 9),
(1 5 7 12; 1 2 5 1 4 3), (2 4 9 11; 10 8 8 10 10 0), (3 6 8 10; 0 3 10 3 10 7),
(1 5 7 11; 8 6 5 10 9 11), (2 6 8 12; 2 9 8 7 6 11), (3 4 9 10; 7 4 8 9 1 4),
(1 5 9 10; 11 11 1 0 2 2), (2 4 8 11; 4 2 1 10 9 11), (3 6 7 12; 1 9 2 8 1 5),

(2 5 9 11; 0 7 6 7 6 11), (3 4 7 10; 5 10 9 5 4 11), (1 6 8 12; 5 9 1 4 8 4),
(1 5 7 10; 6 9 11 3 5 2), (2 6 8 12; 9 3 1 6 4 10), (3 4 9 11; 6 9 6 3 0 9),
(2 5 7 10; 7 11 2 4 7 3), (1 4 9 12; 6 5 6 11 0 1), (3 6 8 11; 7 9 9 2 2 0),
(2 4 9 10; 0 2 10 2 10 8), (1 6 7 12; 2 1 0 11 10 11), (3 5 8 11; 2 8 5 6 3 9),
(2 5 9 12; 2 10 9 8 7 11), (1 6 7 10; 9 3 4 6 7 1), (3 4 8 11; 2 1 7 11 5 6),
(3 5 9 10; 9 2 5 5 8 3), (1 6 8 12; 4 4 11 0 7 7), (2 4 7 11; 6 4 0 10 6 8),
(2 4 7 11; 1 10 3 9 2 5), (1 6 9 10; 8 10 7 2 11 9), (3 5 8 12; 10 7 4 9 6 9),
(3 5 9 12; 7 6 9 11 2 3), (2 6 7 10; 6 3 11 9 5 8), (1 4 8 11; 11 11 0 0 1 1),
(2 5 8 10; 5 6 4 1 11 10), (3 4 9 12; 3 10 7 7 4 9), (1 6 7 11; 11 4 11 5 0 7),
(1 5 8 10; 3 2 6 11 3 4), (3 6 7 12; 6 6 6 0 0 0), (2 4 9 11; 11 5 7 6 8 2),
(1 6 9 12; 1 2 4 1 3 2), (3 4 8 10; 0 2 7 2 7 5), (2 5 7 11; 6 2 5 8 11 3),
(2 6 9 11; 11 6 2 7 3 8), (3 4 7 10; 11 7 11 8 0 4), (1 5 8 12; 0 7 3 7 3 8),
(2 4 7 10; 5 8 1 3 8 5), (1 5 8 12; 10 3 8 5 10 5), (3 6 9 11; 2 7 0 5 10 5),
(2 6 9 10; 1 11 9 10 8 10), (3 5 8 11; 4 0 4 8 0 4), (1 4 7 12; 4 5 2 1 10 9),
(1 6 8 11; 6 5 10 11 4 5), (3 5 7 10; 1 1 1 0 0 0), (2 4 9 12; 2 3 3 1 1 0),
(3 6 7 11; 10 11 11 1 1 0), (2 5 9 12; 3 1 11 10 8 10), (1 4 8 10; 1 6 0 5 11 6).

Example A.25 A uniform $\{3,\ 4\}$-LRGDD$_8$ of type 3^4 with $r_3 = 12$ and $r_4 = 16$, $\boldsymbol{G} = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}, \{10, 11, 12\}\}$; each row forms a uniform parallel class:
(4 9 11; 7 1 2), (3 6 12; 5 2 5), (2 8 10; 3 3 0), (1 5 7; 3 5 2),
(1 5 12; 5 5 0), (4 8 10; 4 1 5), (3 6 7; 7 2 3), (2 9 11; 3 1 6),
(2 5 8; 2 2 0), (3 4 10; 6 1 3), (6 7 11; 4 6 2), (1 9 12; 2 2 0),
(2 8 12; 5 7 2), (1 6 11; 2 2 0), (4 9 10; 6 5 7), (3 5 7; 0 7 7),
(3 8 10; 0 3 3), (4 7 11; 3 7 4), (2 5 12; 0 3 3), (1 6 9; 6 3 5),
(5 7 11; 6 4 6), (2 9 10; 4 4 0), (1 6 8; 0 7 7), (3 4 12; 0 5 5),
(5 9 10; 4 0 4), (1 6 11; 4 0 4), (3 7 12; 5 6 1), (2 4 8; 6 1 3),
(2 5 11; 7 7 0), (6 8 10; 5 1 4), (3 4 9; 5 2 5), (1 7 12; 4 3 7),
(5 7 12; 0 2 2), (2 4 11; 0 5 5), (3 6 9; 6 7 1), (1 8 10; 3 1 6),
(5 9 12; 5 4 7), (2 6 10; 7 5 6), (3 7 11; 3 3 0), (1 4 8; 1 2 1),
(3 5 10; 1 0 7), (6 8 12; 6 3 5), (2 4 9; 3 6 3), (1 7 11; 6 1 3),
(3 9 11; 3 7 4), (6 8 12; 0 0 0), (1 4 10; 6 5 7), (2 5 7; 4 0 4),
(2 6 8 10; 1 4 6 3 5 2), (1 5 9 11; 6 0 7 2 1 7), (3 4 7 12; 3 1 1 6 6 0),
(2 5 9 11; 1 0 0 7 7 0), (3 4 8 12; 1 7 0 6 7 1), (1 6 7 10; 1 0 0 7 7 0),
(1 4 8 11; 3 0 6 5 3 6), (2 5 7 10; 6 7 2 1 4 3), (3 6 9 12; 0 0 4 0 4 4),
(2 6 7 10; 0 1 0 1 0 7), (1 5 9 12; 1 4 7 3 6 3), (3 4 8 11; 2 1 6 7 4 5),
(1 4 8 12; 4 4 0 0 4 4), (3 5 7 10; 5 0 2 3 5 2), (2 6 9 11; 2 1 4 7 2 3),
(2 6 7 12; 6 6 4 0 6 6), (1 4 9 10; 0 1 6 1 6 5), (3 5 8 11; 2 4 5 2 3 1),
(2 5 9 12; 5 5 6 0 1 1), (3 6 8 11; 1 2 4 1 3 2), (1 4 7 10; 7 7 3 0 4 4),
(2 6 9 11; 4 2 3 6 7 1), (3 4 7 10; 4 6 4 2 0 6), (1 5 8 12; 7 5 4 6 5 7),
(3 6 9 10; 2 5 6 3 4 1), (2 4 7 11; 2 3 2 1 0 7), (1 5 8 12; 2 6 1 4 7 3),
(3 5 8 11; 4 3 2 7 6 7), (1 6 7 10; 7 1 2 2 3 1), (2 4 9 12; 7 7 1 0 2 2),
(3 6 9 12; 4 6 3 2 7 5), (2 5 8 10; 3 0 1 5 6 1), (1 4 7 11; 5 2 3 5 6 1),
(3 5 7 11; 7 4 1 5 2 5), (1 4 9 10; 2 6 4 4 2 6), (2 6 8 12; 3 7 5 4 2 6),
(2 4 8 11; 4 6 6 2 2 0), (1 6 7 12; 5 3 6 6 1 3), (3 5 9 10; 6 4 7 6 1 3),
(3 4 9 12; 7 1 7 2 0 6), (2 6 7 10; 5 2 7 5 2 5), (1 5 8 11; 0 1 5 1 5 4),
(3 6 8 11; 3 5 0 2 5 3), (2 4 7 12; 1 5 2 4 1 5), (1 5 9 10; 4 5 7 1 3 2),
(3 5 8 10; 3 6 5 3 2 7), (2 4 7 12; 5 4 0 7 3 4), (1 6 9 11; 3 7 4 4 1 5).