

Orthogonal blocking arrangements for 24-run and 28-run two-level designs: supplementary tables.

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Abstract

In this document, we characterize the best orthogonally blocked 24-run and 28-run designs according to three criteria in terms of their F_3 , F_4 and FA_3 vectors and the rank of their interaction model matrix.

Table 1: Optimal blocking of 24-run designs in three blocks. Elements of the FA_3 vector correspond to length-3 word counts of $2/3$, $1/2$ and $1/6$.

ID	$F_3(16, 8)$		$F_4(24, 16, 8)$			FA_3			Rank	Optimality
4.1	0	0	0	0	1	0	0	0	11	W_2, W_3
4.2	0	0	1	0	0	0	6	0	8	W_2^-
5.1	0	0	0	0	5	0	0	2	16	W_2, W_3
5.2	0	0	0	0	5	1	2	6	16	W_2^-
6.1	0	2	0	0	9	0	0	4	22	W_2
6.2	0	0	0	0	15	3	0	12	18	W_2^-
6.3	0	0	0	0	15	0	0	6	18	W_3
7.1	0	4	0	0	21	0	0	8	24	W_2
7.2	0	0	0	0	35	2	3	11	19	W_2^-
7.3	0	0	0	0	35	0	0	10	19	W_3
8.1	0	7	0	0	53	0	0	13	24	W_2
8.2	0	0	0	0	70	2	4	16	20	W_2^-
8.3	0	0	0	0	70	0	0	14	20	W_3
9.1	0	10	0	0	98	0	0	18	24	W_2
9.2	0	0	0	0	126	0	9	18	21	W_2^-
9.3	0	0	0	0	126	0	0	18	21	W_3
10.1	0	14	0	0	168	1	2	24	24	W_2
10.2	0	0	0	0	210	2	4	32	22	W_2^-
10.3	0	0	0	0	210	0	3	24	22	W_3
11.1	0	18	0	0	270	1	3	29	24	W_2
11.2	0	0	0	0	330	3	5	33	23	W_2^-
11.3	0	0	0	0	330	0	10	30	23	W_3
12.1	0	0	0	0	495	0	12	36	24	W_2, W_2^-, W_3
13.1	6	30	0	0	495	3	6	42	24	W_2, W_2^-
13.2	0	90	1	0	366	0	3	51	24	W_3
14.1	4	92	1	0	540	1	4	56	24	W_2
14.2	4	92	1	0	540	4	4	48	24	W_2^-
14.3	0	136	3	10	402	0	0	61	24	W_3
15.1	3	151	3	0	630	0	6	54	24	W_2
15.2	3	151	3	0	630	1	3	63	24	W_2^-
15.3	0	181	3	4	578	0	1	63	24	W_3
16.1	4	204	6	0	766	1	2	70	24	W_2, W_2^-
16.2	3	216	3	14	721	0	0	76	24	W_3

Table 2: Optimal blocking of 24-run designs in four blocks. Elements of the FA_3 vector correspond to length-3 word counts of 1, 5/9, 1/3 and 1/9.

ID	$F_3(8)$	$F_4(24, 16, 8)$			FA_3				Rank	Optimality
4.1	0	0	0	1	0	0	0	6	11	W_2, W_3
4.2	0	1	0	0	6	0	0	0	8	W_2^-
5.1	0	0	0	5	0	0	0	10	16	W_2, W_3
5.2	0	0	0	5	3	0	1	6	16	W_2^-
6.1	2	0	0	9	0	0	0	15	22	W_2
6.2	0	0	0	15	1	5	2	7	18	W_2^-
6.3	0	0	0	15	0	0	0	15	18	W_3
7.1	4	0	0	21	0	0	2	19	24	W_2
7.2	0	0	0	35	0	6	9	6	19	W_2^-
7.3	0	0	0	35	0	0	0	21	19	W_3
8.1	7	0	0	53	0	1	0	27	24	W_2
8.2	0	0	0	70	0	8	12	8	20	W_2^-
8.3	0	0	0	70	0	0	0	28	20	W_3
9.1	10	0	0	98	0	0	2	34	24	W_2
9.2	0	0	0	126	0	0	36	0	21	W_2^-
9.3	0	0	0	126	0	0	0	36	21	W_3
10.1	14	0	0	168	1	0	14	30	24	W_2
10.2	0	0	0	210	0	0	36	9	22	W_2^-
10.3	0	0	0	210	0	0	0	45	22	W_3
11.1	18	0	0	270	1	0	18	36	24	W_2
11.2	0	0	0	330	3	0	28	24	23	W_2^-
11.3	0	0	0	330	0	10	20	25	23	W_3
12.1	0	0	0	495	0	18	12	36	24	W_2, W_2^-, W_3
13.1	98	1	4	342	0	8	8	62	24	W_2, W_2^-, W_3
14.1	136	2	12	403	0	4	16	71	24	W_2, W_2^-, W_3
15.1	180	2	21	507	1	7	8	89	24	W_2
15.2	180	5	12	516	2	5	9	89	24	W_2^-
15.3	180	2	23	499	0	9	8	88	24	W_3
16.1	224	4	32	648	0	8	16	96	24	W_2, W_2^-
16.2	224	12	16	640	0	0	32	88	24	W_3
17.1	280	2	83	686	0	16	0	120	24	W_2, W_2^-
17.2	280	12	16	864	0	0	32	104	24	W_3
18.1	336	9	81	927	0	9	18	126	24	W_2, W_2^-, W_3
19.1	408	4	38	1480	0	11	14	146	24	W_2, W_2^-
19.2	408	9	81	1263	0	9	18	144	24	W_3
20.1	480	5	48	1848	0	12	16	162	24	W_2, W_2^-, W_3

Table 3: Optimal blocking of 24-run designs in six blocks. Elements of the FA_3 vector correspond to length-3 word counts of 1, 2/3, and 1/3.

ID	$F_3(16, 8)$		$F_4(24, 8)$		FA_3			Rank	Optimality
4.1	0	0	0	1	0	0	4	11	W_2, W_3
4.2	0	0	0	1	2	4	0	11	W_2^-
5.1	0	0	0	5	0	1	6	16	W_2, W_3
5.2	0	0	0	5	0	10	0	16	W_2^-
6.1	0	2	0	9	0	2	8	22	W_2
6.2	0	0	0	15	0	15	0	18	W_2^-
6.3	0	0	0	15	0	2	8	17	W_3
7.1	0	4	0	21	0	4	14	24	W_2
7.2	0	0	0	35	0	15	5	19	W_2^-
7.3	0	0	0	35	0	6	15	19	W_3
8.1	0	7	0	53	1	5	19	24	W_2
8.2	0	0	0	70	4	8	16	20	W_2^-
8.3	0	0	0	70	0	8	20	20	W_3
9.1	0	10	0	98	0	9	24	24	W_2
9.2	0	0	0	126	1	14	21	21	W_2^-
9.3	0	0	0	126	0	12	24	21	W_3
10.1	0	14	0	168	0	12	30	24	W_2
10.2	0	0	0	210	1	16	28	22	W_2^-
10.3	0	0	0	210	0	16	28	22	W_3
11.1	0	18	0	270	1	16	34	24	W_2
11.2	0	0	0	330	2	20	29	23	W_2^-
11.3	0	0	0	330	0	25	25	23	W_3
12.1	0	0	0	495	0	30	30	24	W_2, W_2^-, W_3
13.1	6	30	0	495	2	24	36	24	W_2, W_2^-
13.2	0	90	1	366	2	12	48	24	W_3
14.1	4	92	1	540	3	16	52	24	W_2, W_2^-, W_3

Table 4: Optimal blocking of 28-run designs in seven blocks. Elements of the FA_3 vector correspond to length-3 word counts of 6/7, 4/7 and 2/7.

ID	$F_3(12, 4)$		$F_4(20, 12, 4)$			FA_3			Rank	Optimality
4.1	0	4	0	0	1	0	0	4	11	W_1, W_2, W_3
4.2	0	4	0	1	0	2	4	0	11	W_2^-
5.1	0	10	0	0	5	0	0	7	16	W_1, W_2, W_3
5.2	0	10	0	2	3	1	6	3	16	W_2^-
6.1	0	20	0	0	15	0	1	10	22	W_1, W_2
6.2	0	20	1	4	10	3	4	8	20	W_2^-
6.3	0	20	0	0	15	0	0	12	22	W_3
7.1	0	35	0	2	33	0	5	12	28	W_1
7.2	0	35	0	4	31	0	3	13	28	W_2
7.3	0	35	3	0	32	3	6	12	26	W_2^-
7.4	0	35	1	2	32	0	1	17	28	W_3
8.1	0	56	0	10	60	0	8	15	28	W_1
8.2	0	56	2	8	60	0	4	20	28	W_2, W_3
8.3	0	56	6	0	64	4	8	16	27	W_2^-
9.1	0	84	0	25	101	0	10	22	28	W_1, W_2
9.2	0	84	6	8	112	0	12	20	28	W_2^-
9.3	0	84	0	36	90	0	6	30	26	W_3
10.1	0	120	10	16	184	0	8	37	28	W_1, W_2, W_2^-, W_3
11.1	5	160	10	32	288	0	10	45	28	W_1, W_2, W_2^-, W_3
12.1	10	210	15	48	432	0	12	54	28	W_1, W_2, W_2^-, W_3