

# $S_{10}(2) \pmod{7}$

	blocks	defect	matrix
$G :$	1	1	$7 \times 6$
	2	1	$7 \times 6$
	3	1	$7 \times 6$
	4	1	$7 \times 6$
	5	1	$7 \times 6$
	6	1	$7 \times 6$
	7	0	$11935_1 = \chi_{10}, \varphi_{10}$
	8	1	$7 \times 6$
	9	0	$18445_1 = \chi_{13}, \varphi_{13}$
	10	1	$7 \times 6$
	11	0	$29512_1 = \chi_{15}, \varphi_{15}$
	12	1	$7 \times 6$
	13	0	$40579_1 = \chi_{17}, \varphi_{18}$
	14	1	$7 \times 6$
	15	0	$52360_1 = \chi_{22}, \varphi_{22}$
	16	0	$57288_1 = \chi_{23}, \varphi_{23}$
	17	1	$7 \times 6$
	18	0	$81158_1 = \chi_{26}, \varphi_{26}$
	19	0	$184450_1 = \chi_{28}, \varphi_{28}$
	20	0	$190960_1 = \chi_{29}, \varphi_{29}$
	21	0	$202895_1 = \chi_{30}, \varphi_{30}$
	22	0	$202895_2 = \chi_{31}, \varphi_{31}$
	23	0	$202895_3 = \chi_{32}, \varphi_{32}$
	24	0	$202895_4 = \chi_{33}, \varphi_{33}$
	25	0	$365211_1 = \chi_{38}, \varphi_{38}$
	26	0	$381920_1 = \chi_{40}, \varphi_{40}$
	27	0	$405790_1 = \chi_{41}, \varphi_{42}$
	28	0	$405790_2 = \chi_{42}, \varphi_{43}$
	29	0	$405790_3 = \chi_{43}, \varphi_{44}$
	30	0	$405790_4 = \chi_{44}, \varphi_{45}$
	31	0	$405790_5 = \chi_{45}, \varphi_{46}$
	32	0	$515592_1 = \chi_{48}, \varphi_{48}$
	33	0	$649264_1 = \chi_{50}, \varphi_{50}$
	34	0	$811580_1 = \chi_{54}, \varphi_{54}$
	35	0	$944384_1 = \chi_{56}, \varphi_{56}$
	36	0	$973896_1 = \chi_{57}, \varphi_{57}$
	37	0	$973896_2 = \chi_{58}, \varphi_{58}$
	38	0	$1014475_1 = \chi_{59}, \varphi_{60}$
	39	0	$1014475_2 = \chi_{60}, \varphi_{61}$
	40	0	$1014475_3 = \chi_{61}, \varphi_{62}$

	blocks	defect	matrix
	41	0	$1095633_1 = \chi_{62}, \varphi_{63}$
	42	0	$1095633_2 = \chi_{63}, \varphi_{64}$
	43	0	$1217370_1 = \chi_{65}, \varphi_{66}$
	44	0	$1298528_1 = \chi_{67}, \varphi_{67}$
	45	0	$1298528_2 = \chi_{68}, \varphi_{68}$
	46	0	$1432200_1 = \chi_{70}, \varphi_{72}$
	47	0	$1623160_1 = \chi_{73}, \varphi_{75}$
	48	0	$1623160_2 = \chi_{74}, \varphi_{76}$
	49	0	$1623160_3 = \chi_{75}, \varphi_{77}$
	50	0	$1675520_1 = \chi_{76}, \varphi_{78}$
	51	0	$1826055_1 = \chi_{77}, \varphi_{79}$
	52	0	$1826055_2 = \chi_{78}, \varphi_{80}$
	53	0	$1826055_3 = \chi_{79}, \varphi_{81}$
	54	0	$1826055_4 = \chi_{80}, \varphi_{82}$
	55	0	$1826055_5 = \chi_{81}, \varphi_{83}$
	56	0	$1947792_1 = \chi_{84}, \varphi_{85}$
	57	0	$2028950_1 = \chi_{86}, \varphi_{86}$
	58	0	$2028950_2 = \chi_{87}, \varphi_{87}$
	59	0	$2028950_3 = \chi_{88}, \varphi_{88}$
	60	0	$2213400_1 = \chi_{89}, \varphi_{89}$
	61	0	$2434740_1 = \chi_{92}, \varphi_{91}$
	62	0	$2434740_2 = \chi_{93}, \varphi_{92}$
	63	0	$2921688_1 = \chi_{95}, \varphi_{96}$
	64	0	$3055360_1 = \chi_{96}, \varphi_{97}$
	65	0	$3246320_1 = \chi_{98}, \varphi_{99}$
	66	0	$3246320_2 = \chi_{99}, \varphi_{100}$
	67	0	$3246320_3 = \chi_{100}, \varphi_{101}$
	68	0	$3286899_1 = \chi_{101}, \varphi_{102}$
	69	0	$3286899_2 = \chi_{102}, \varphi_{103}$
	70	0	$3652110_1 = \chi_{105}, \varphi_{104}$
	71	0	$3652110_2 = \chi_{106}, \varphi_{105}$
	72	0	$4057900_1 = \chi_{107}, \varphi_{107}$
	73	0	$4382532_1 = \chi_{108}, \varphi_{110}$
	74	0	$4869480_1 = \chi_{111}, \varphi_{112}$
	75	0	$4869480_2 = \chi_{112}, \varphi_{113}$
	76	0	$4869480_3 = \chi_{113}, \varphi_{114}$
	77	0	$5478165_1 = \chi_{116}, \varphi_{117}$
	78	0	$5478165_2 = \chi_{117}, \varphi_{118}$
	79	0	$5478165_3 = \chi_{118}, \varphi_{119}$
	80	0	$5902400_1 = \chi_{119}, \varphi_{123}$

	blocks	defect	matrix
	81	0	$6492640_1 = \chi_{126}, \varphi_{126}$
	82	0	$6492640_2 = \chi_{127}, \varphi_{127}$
	83	0	$6573798_1 = \chi_{128}, \varphi_{128}$
	84	0	$7332864_1 = \chi_{130}, \varphi_{129}$
	85	0	$8115800_1 = \chi_{131}, \varphi_{131}$
	86	0	$8115800_2 = \chi_{132}, \varphi_{132}$
	87	0	$8115800_3 = \chi_{133}, \varphi_{133}$
	88	0	$8115800_4 = \chi_{134}, \varphi_{134}$
	89	0	$8765064_1 = \chi_{136}, \varphi_{135}$
	90	0	$9130275_1 = \chi_{137}, \varphi_{137}$
	91	0	$9130275_2 = \chi_{138}, \varphi_{138}$
	92	0	$9130275_3 = \chi_{139}, \varphi_{139}$
	93	0	$9130275_4 = \chi_{140}, \varphi_{140}$
	94	0	$9738960_1 = \chi_{141}, \varphi_{141}$
	95	0	$9738960_2 = \chi_{142}, \varphi_{142}$
	96	0	$9860697_1 = \chi_{143}, \varphi_{143}$
	97	0	$10388224_1 = \chi_{144}, \varphi_{145}$
	98	0	$10956330_1 = \chi_{145}, \varphi_{147}$
	99	0	$10956330_2 = \chi_{146}, \varphi_{148}$
	100	0	$12985280_1 = \chi_{154}, \varphi_{150}$
	101	0	$13147596_1 = \chi_{155}, \varphi_{151}$
	102	0	$13147596_2 = \chi_{156}, \varphi_{152}$
	103	0	$14501025_1 = \chi_{157}, \varphi_{153}$
	104	0	$14501025_2 = \chi_{158}, \varphi_{154}$
	105	0	$14501025_3 = \chi_{159}, \varphi_{155}$
	106	0	$14501025_4 = \chi_{160}, \varphi_{156}$
	107	0	$14608440_1 = \chi_{161}, \varphi_{157}$
	108	0	$14608440_2 = \chi_{162}, \varphi_{158}$
	109	0	$14608440_3 = \chi_{163}, \varphi_{159}$
	110	0	$16231600_1 = \chi_{166}, \varphi_{162}$
	111	0	$16434495_1 = \chi_{167}, \varphi_{163}$
	112	0	$16434495_2 = \chi_{168}, \varphi_{164}$
	113	0	$16434495_3 = \chi_{169}, \varphi_{165}$
	114	0	$16434495_4 = \chi_{170}, \varphi_{166}$
	115	0	$17530128_1 = \chi_{172}, \varphi_{167}$
	116	0	$18260550_1 = \chi_{173}, \varphi_{169}$
	117	0	$18260550_2 = \chi_{174}, \varphi_{170}$
	118	0	$18887680_1 = \chi_{175}, \varphi_{171}$
	119	0	$21912660_1 = \chi_{178}, \varphi_{173}$
	120	0	$22410675_1 = \chi_{180}, \varphi_{174}$

	blocks	defect	matrix
	121	0	22410675 <sub>2</sub> = $\chi_{181}, \varphi_{175}$
	122	0	22410675 <sub>3</sub> = $\chi_{182}, \varphi_{176}$
	123	0	23856525 <sub>1</sub> = $\chi_{185}, \varphi_{177}$
	124	0	23856525 <sub>2</sub> = $\chi_{186}, \varphi_{178}$
	125	0	23856525 <sub>3</sub> = $\chi_{187}, \varphi_{179}$
	126	0	25970560 <sub>1</sub> = $\chi_{188}, \varphi_{180}$
	127	0	25970560 <sub>2</sub> = $\chi_{189}, \varphi_{181}$
	128	0	26295192 <sub>1</sub> = $\chi_{190}, \varphi_{182}$
	129	0	29002050 <sub>1</sub> = $\chi_{192}, \varphi_{183}$
	130	0	29002050 <sub>2</sub> = $\chi_{193}, \varphi_{184}$
	131	0	29216880 <sub>1</sub> = $\chi_{194}, \varphi_{185}$
	132	0	32868990 <sub>1</sub> = $\chi_{196}, \varphi_{186}$

<b>Block 1:</b>	$\varphi_1$	$\varphi_{20}$	$\varphi_{36}$	$\varphi_{51}$	$\varphi_{59}$	$\varphi_{69}$
$1_1 = \chi_1$	1	.	.	.	.	.
$46376_1 = \chi_{19}$	.	1	.	.	.	.
$278256_1 = \chi_{36}$	1	.	1	.	.	.
$736560_1 = \chi_{51}$	.	1	.	1	.	.
$1292544_1 = \chi_{66}$	.	.	1	.	1	.
$2023680_1 = \chi_{85}$	.	.	.	1	.	1
$2347785_1 = \chi_{90}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_1 &= 1_1 \\ \varphi_{20} &= 46376_1 \\ \varphi_{36} &= 278255_1 \\ \varphi_{51} &= 690184_1 \\ \varphi_{59} &= 1014289_1 \\ \varphi_{69} &= 1333496_1 \end{aligned}$$

<b>Block 2:</b>	$\varphi_2$	$\varphi_7$	$\varphi_{17}$	$\varphi_{39}$	$\varphi_{90}$	$\varphi_{95}$
$155_1 = \chi_2$	1	.	.	.	.	.
$6138_1 = \chi_7$	1	1	.	.	.	.
$46376_2 = \chi_{20}$	.	1	1	.	.	.
$371008_1 = \chi_{39}$	.	.	.	1	.	.
$2347785_2 = \chi_{91}$	.	.	1	.	1	.
$3142656_1 = \chi_{97}$	.	.	.	1	.	1
$5079040_1 = \chi_{115}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_2 &= 155_1 \\ \varphi_7 &= 5983_1 \\ \varphi_{17} &= 40393_1 \\ \varphi_{39} &= 371008_1 \\ \varphi_{90} &= 2307392_1 \\ \varphi_{95} &= 2771648_1 \end{aligned}$$

<b>Block 3:</b>	$\varphi_3$	$\varphi_{11}$	$\varphi_{41}$	$\varphi_{73}$	$\varphi_{124}$	$\varphi_{144}$
$187_1 = \chi_3$	1	.	.	.	.	.
$17050_1 = \chi_{11}$	.	1	.	.	.	.
$417384_1 = \chi_{46}$	.	1	1	.	.	.
$1855040_1 = \chi_{82}$	.	.	1	1	.	.
$5936128_3 = \chi_{122}$	1	.	.	.	1	.
$11738925_4 = \chi_{151}$	.	.	.	1	.	1
$16220160_1 = \chi_{165}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_3 &= 187_1 \\ \varphi_{11} &= 17050_1 \\ \varphi_{41} &= 400334_1 \\ \varphi_{73} &= 1454706_1 \\ \varphi_{124} &= 5935941_1 \\ \varphi_{144} &= 10284219_1 \end{aligned}$$

<b>Block 4:</b>	$\varphi_4$	$\varphi_{27}$	$\varphi_{37}$	$\varphi_{108}$	$\varphi_{109}$	$\varphi_{130}$
$341_1 = \chi_4$	1	.	.	.	.	.
$173910_1 = \chi_{27}$	1	1	.	.	.	.
$313038_1 = \chi_{37}$	.	.	1	.	.	.
$4452096_1 = \chi_{109}$	.	1	.	1	.	.
$4637600_1 = \chi_{110}$	.	.	1	.	1	.
$11738925_3 = \chi_{150}$	.	.	.	1	.	1
$11784960_1 = \chi_{152}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_4 &= 341_1 \\ \varphi_{27} &= 173569_1 \\ \varphi_{37} &= 313038_1 \\ \varphi_{108} &= 4278527_1 \\ \varphi_{109} &= 4324562_1 \\ \varphi_{130} &= 7460398_1 \end{aligned}$$

<b>Block 5:</b>	$\varphi_5$	$\varphi_8$	$\varphi_{35}$	$\varphi_{98}$	$\varphi_{120}$	$\varphi_{125}$
$495_1 = \chi_5$	1	.	.	.	.	.
$11594_1 = \chi_8$	1	1	.	.	.	.
$231880_2 = \chi_{35}$	.	.	1	.	.	.
$3339072_1 = \chi_{103}$	.	.	1	1	.	.
$6127616_1 = \chi_{123}$	.	1	.	.	.	1
$8729600_1 = \chi_{135}$	.	.	.	1	1	.
$11738925_1 = \chi_{148}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_5 &= 495_1 \\ \varphi_8 &= 11099_1 \\ \varphi_{35} &= 231880_1 \\ \varphi_{98} &= 3107192_1 \\ \varphi_{120} &= 5622408_1 \\ \varphi_{125} &= 6116517_1 \end{aligned}$$

<b>Block 6:</b>	$\varphi_6$	$\varphi_9$	$\varphi_{34}$	$\varphi_{84}$	$\varphi_{121}$	$\varphi_{160}$
$527_1 = \chi_6$	1	.	.	.	.	.
$11594_2 = \chi_9$	.	1	.	.	.	.
$231880_1 = \chi_{34}$	1	.	1	.	.	.
$1855040_2 = \chi_{83}$	.	1	.	1	.	.
$5936128_2 = \chi_{121}$	.	.	1	.	1	.
$17268736_1 = \chi_{171}$	.	.	.	1	.	1
$21130065_1 = \chi_{176}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_6 &= 527_1 \\ \varphi_9 &= 11594_1 \\ \varphi_{34} &= 231353_1 \\ \varphi_{84} &= 1843446_1 \\ \varphi_{121} &= 5704775_1 \\ \varphi_{160} &= 15425290_1 \end{aligned}$$

<b>Block 8:</b>	$\varphi_{12}$	$\varphi_{19}$	$\varphi_{65}$	$\varphi_{94}$	$\varphi_{106}$	$\varphi_{172}$
$17391_1 = \chi_{12}$	1	.	.	.	.	.
$46035_1 = \chi_{18}$	.	1	.	.	.	.
$1159400_1 = \chi_{64}$	.	1	1	.	.	.
$2782560_1 = \chi_{94}$	1	.	.	1	.	.
$5008608_1 = \chi_{114}$	.	.	1	.	1	.
$22347776_1 = \chi_{179}$	.	.	.	1	.	1
$23477850_2 = \chi_{184}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_{12} &= 17391_1 \\ \varphi_{19} &= 46035_1 \\ \varphi_{65} &= 1113365_1 \\ \varphi_{94} &= 2765169_1 \\ \varphi_{106} &= 3895243_1 \\ \varphi_{172} &= 19582607_1 \end{aligned}$$

<b>Block 10:</b>	$\varphi_{14}$	$\varphi_{47}$	$\varphi_{52}$	$\varphi_{93}$	$\varphi_{122}$	$\varphi_{136}$
$28985_1 = \chi_{14}$	1	.	.	.	.	.
$434775_1 = \chi_{47}$	.	1	.	.	.	.
$782595_1 = \chi_{52}$	1	.	1	.	.	.
$3478200_1 = \chi_{104}$	.	.	1	1	.	.
$6260760_1 = \chi_{124}$	.	1	.	.	1	.
$11738925_2 = \chi_{149}$	.	.	.	1	.	1
$14840320_1 = \chi_{164}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_{14} &= 28985_1 \\ \varphi_{47} &= 434775_1 \\ \varphi_{52} &= 753610_1 \\ \varphi_{93} &= 2724590_1 \\ \varphi_{122} &= 5825985_1 \\ \varphi_{136} &= 9014335_1 \end{aligned}$$

<b>Block 12:</b>	$\varphi_{16}$	$\varphi_{25}$	$\varphi_{49}$	$\varphi_{71}$	$\varphi_{111}$	$\varphi_{187}$
$40392_1 = \chi_{16}$	1	.	.	.	.	.
$63240_1 = \chi_{25}$	.	1	.	.	.	.
$556512_1 = \chi_{49}$	1	.	1	.	.	.
$1473120_1 = \chi_{71}$	.	1	.	1	.	.
$5936128_1 = \chi_{120}$	.	.	.	1	1	.
$33554432_1 = \chi_{197}$	.	.	1	.	.	1
$37564560_1 = \chi_{198}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_{16} &= 40392_1 \\ \varphi_{25} &= 63240_1 \\ \varphi_{49} &= 516120_1 \\ \varphi_{71} &= 1409880_1 \\ \varphi_{111} &= 4526248_1 \\ \varphi_{187} &= 33038312_1 \end{aligned}$$

<b>Block 14:</b>	$\varphi_{21}$	$\varphi_{53}$	$\varphi_{70}$	$\varphi_{115}$	$\varphi_{146}$	$\varphi_{161}$
$52173_1 = \chi_{21}$	1	.	.	.	.	.
$782595_2 = \chi_{53}$	.	1	.	.	.	.
$1408671_1 = \chi_{69}$	1	.	1	.	.	.
$6260760_2 = \chi_{125}$	.	.	1	1	.	.
$11269368_1 = \chi_{147}$	.	1	.	.	1	.
$21130065_2 = \chi_{177}$	.	.	.	1	.	1
$26712576_1 = \chi_{191}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_{21} &= 52173_1 \\ \varphi_{53} &= 782595_1 \\ \varphi_{70} &= 1356498_1 \\ \varphi_{115} &= 4904262_1 \\ \varphi_{146} &= 10486773_1 \\ \varphi_{161} &= 16225803_1 \end{aligned}$$

<b>Block 17:</b>	$\varphi_{24}$	$\varphi_{55}$	$\varphi_{74}$	$\varphi_{116}$	$\varphi_{149}$	$\varphi_{168}$
$57970_1 = \chi_{24}$	1	.	.	.	.	.
$869550_1 = \chi_{55}$	.	1	.	.	.	.
$1565190_1 = \chi_{72}$	1	.	1	.	.	.
$6956400_1 = \chi_{129}$	.	.	1	1	.	.
$12521520_1 = \chi_{153}$	.	1	.	.	1	.
$23477850_1 = \chi_{183}$	.	.	.	1	.	1
$29680640_1 = \chi_{195}$	.	.	.	.	1	1

$$\begin{aligned} \varphi_{24} &= 57970_1 \\ \varphi_{55} &= 869550_1 \\ \varphi_{74} &= 1507220_1 \\ \varphi_{116} &= 5449180_1 \\ \varphi_{149} &= 11651970_1 \\ \varphi_{168} &= 18028670_1 \end{aligned}$$