

## $S_4(5).2 \pmod{5}$

	blocks	defect	matrix
$G :$	1	4	$45 \times 28$
	2	0	$625_1 = \chi_{33,0}, \varphi_{15,0}$
	3	0	$625_2 = \chi_{33,1}, \varphi_{15,1}$
$2.G :$	4	4	$31 \times 20$

<b>Block 1:</b>	$\varphi_{1,0}$	$\varphi_{1,1}$	$\varphi_{2,0}$	$\varphi_{2,1}$	$\varphi_{3,0}$	$\varphi_{3,1}$	$\varphi_{4,0}$	$\varphi_{4,1}$	$\varphi_{5,0}$	$\varphi_{5,1}$	$\varphi_{6,0}$	$\varphi_{6,1}$	$\varphi_{7,0}$
$1_1 = \chi_{1,0}$	1	.	.	.	.	.	.	.	.	.	.	.	.
$1_2 = \chi_{1,1}$	.	1	.	.	.	.	.	.	.	.	.	.	.
$26_1 = \chi_{2+}$	.	.	.	.	.	.	1	1	.	.	.	.	.
$40_1 = \chi_{4,0}$	.	.	.	.	1	.	.	.	.	1	.	.	.
$40_2 = \chi_{4,1}$	.	.	.	.	.	1	.	.	1	.	.	.	.
$65_1 = \chi_{5,0}$	.	.	.	.	.	1	.	.	.	.	.	.	.
$65_2 = \chi_{5,1}$	.	.	.	.	1	.	.	.	.	.	.	.	.
$65_3 = \chi_{6,0}$	.	.	.	.	.	.	.	.	.	1	.	.	1
$65_4 = \chi_{6,1}$	.	.	.	.	.	.	.	.	1	.	.	.	.
$156_1 = \chi_{7+}$	.	.	.	.	1	1	.	.	.	.	.	.	.
$90_1 = \chi_{9,0}$	.	.	.	.	.	.	.	.	.	.	.	.	.
$90_2 = \chi_{9,1}$	.	.	.	.	.	.	.	.	.	.	.	.	1
$104_1 = \chi_{10,0}$	1	.	.	.	.	.	.	.	.	.	.	.	1
$104_2 = \chi_{10,1}$	.	1	.	.	.	.	.	.	.	.	.	.	.
$104_3 = \chi_{11,0}$	1	.	.	.	.	.	1	.	.	.	.	1	.
$104_4 = \chi_{11,1}$	.	1	.	.	.	.	.	1	.	.	1	.	.
$104_5 = \chi_{12,0}$	.	.	.	1	.	.	1	.	.	.	.	.	.
$104_6 = \chi_{12,1}$	.	.	1	.	.	.	.	1	.	.	.	.	.
$130_1 = \chi_{13,0}$	2	.	.	.	.	.	1	.	.	.	.	.	.
$130_2 = \chi_{13,1}$	.	2	.	.	.	.	.	1	.	.	.	.	.
$156_2 = \chi_{14,0}$	.	.	.	1	.	.	.	.	.	1	1	.	.
$156_3 = \chi_{14,1}$	.	.	1	.	.	.	.	.	1	.	.	1	.
$416_1 = \chi_{15+}$	1	1	1	1	.	.	1	1	.	.	1	1	.
$624_1 = \chi_{17+}$	1	1	.	.	1	1	1	1	.	.	.	.	.
$624_2 = \chi_{19+}$	.	.	1	1	.	.	1	1	.	.	1	1	.
$650_1 = \chi_{21+}$	.	.	.	.	.	.	.	.	.	.	.	.	.
$780_1 = \chi_{23+}$	1	1	.	.	.	.	2	2	.	.	1	1	.
$520_1 = \chi_{25,0}$	1	.	.	.	.	1	2	.	1	.	.	1	.
$520_2 = \chi_{25,1}$	.	1	.	.	1	.	.	2	.	1	1	.	1
$520_3 = \chi_{26,0}$	2	.	1	.	1	.	1	1	.	.	.	.	1
$520_4 = \chi_{26,1}$	.	2	.	1	.	1	1	1	.	.	.	.	.
$520_5 = \chi_{27,0}$	.	.	.	.	.	1	.	.	1	.	.	1	.
$520_6 = \chi_{27,1}$	.	.	.	.	1	.	.	.	.	1	1	.	1
$576_1 = \chi_{28,0}$	1	.	.	1	1	.	1	.	.	.	.	.	.
$576_2 = \chi_{28,1}$	.	1	1	.	.	1	.	1	.	.	.	.	.
$576_3 = \chi_{29,0}$	.	.	.	1	.	1	1	.	.	.	.	1	.
$576_4 = \chi_{29,1}$	.	.	1	.	1	.	.	1	.	.	1	.	1
$576_5 = \chi_{30,0}$	1	.	.	.	.	.	1	1	.	1	1	1	1
$576_6 = \chi_{30,1}$	.	1	.	.	.	.	1	1	1	.	1	1	.
$624_3 = \chi_{31,0}$	.	1	.	1	1	.	1	1	.	1	1	1	.

(Block 1:)	$\varphi_{7,1}$	$\varphi_{8,0}$	$\varphi_{8,1}$	$\varphi_{9,0}$	$\varphi_{9,1}$	$\varphi_{10,0}$	$\varphi_{10,1}$	$\varphi_{11,0}$	$\varphi_{11,1}$	$\varphi_{12,0}$	$\varphi_{12,1}$	$\varphi_{13,0}$
$1_1 = \chi_{1,0}$	.	.	.	.	.	.	.	.	.	.	.	.
$1_2 = \chi_{1,1}$	.	.	.	.	.	.	.	.	.	.	.	.
$26_1 = \chi_{2+}$	.	.	.	.	.	.	.	.	.	.	.	.
$40_1 = \chi_{4,0}$	.	.	.	.	.	.	.	.	.	.	.	.
$40_2 = \chi_{4,1}$	.	.	.	.	.	.	.	.	.	.	.	.
$65_1 = \chi_{5,0}$	.	1	.	.	.	.	.	.	.	.	.	.
$65_2 = \chi_{5,1}$	.	.	1	.	.	.	.	.	.	.	.	.
$65_3 = \chi_{6,0}$	.	.	.	.	.	.	.	.	.	.	.	.
$65_4 = \chi_{6,1}$	1	.	.	.	.	.	.	.	.	.	.	.
$156_1 = \chi_{7+}$	.	.	.	1	1	.	.	.	.	.	.	.
$90_1 = \chi_{9,0}$	1	1	.	.	.	.	.	.	.	.	.	.
$90_2 = \chi_{9,1}$	.	.	1	.	.	.	.	.	.	.	.	.
$104_1 = \chi_{10,0}$	.	.	.	.	1	.	.	.	.	.	.	.
$104_2 = \chi_{10,1}$	1	.	.	1	.	.	.	.	.	.	.	.
$104_3 = \chi_{11,0}$	.	1	.	.	.	.	.	.	.	.	.	.
$104_4 = \chi_{11,1}$	.	.	1	.	.	.	.	.	.	.	.	.
$104_5 = \chi_{12,0}$	.	.	.	.	.	.	1	.	.	.	.	.
$104_6 = \chi_{12,1}$	.	.	.	.	.	1	.	.	.	.	.	.
$130_1 = \chi_{13,0}$	.	.	.	.	.	.	.	.	.	1	.	.
$130_2 = \chi_{13,1}$	.	.	.	.	.	.	.	.	.	.	1	.
$156_2 = \chi_{14,0}$	.	.	.	.	.	.	1	.	.	.	.	.
$156_3 = \chi_{14,1}$	.	.	.	.	.	1	.	.	.	.	.	.
$416_1 = \chi_{15+}$	.	.	.	1	1	1	1	.	.	.	.	.
$624_1 = \chi_{17+}$	.	.	.	1	1	.	.	1	1	1	1	.
$624_2 = \chi_{19+}$	.	.	.	1	1	1	1	1	1	.	.	.
$650_1 = \chi_{21+}$	.	.	.	.	.	.	.	2	2	1	1	.
$780_1 = \chi_{23+}$	.	.	.	1	1	.	.	.	.	.	.	1
$520_1 = \chi_{25,0}$	1	1	.	1	.	.	.	.	.	.	.	.
$520_2 = \chi_{25,1}$	.	.	1	.	1	.	.	.	.	.	.	1
$520_3 = \chi_{26,0}$	.	.	.	.	2	.	1	1	.	1	.	.
$520_4 = \chi_{26,1}$	1	.	.	2	.	1	.	.	1	.	1	.
$520_5 = \chi_{27,0}$	1	1	.	.	.	.	.	.	.	.	.	.
$520_6 = \chi_{27,1}$	.	.	1	.	.	.	.	.	.	.	.	.
$576_1 = \chi_{28,0}$	.	.	.	1	1	.	1	1	1	1	.	.
$576_2 = \chi_{28,1}$	.	.	.	1	1	1	.	1	1	.	1	.
$576_3 = \chi_{29,0}$	1	1	.	1	.	.	.	.	.	.	.	.
$576_4 = \chi_{29,1}$	.	.	1	.	1	.	.	.	.	.	.	.
$576_5 = \chi_{30,0}$	.	.	.	.	1	.	1	.	.	.	.	1
$576_6 = \chi_{30,1}$	1	.	.	1	.	1	.	.	.	.	.	.
$624_3 = \chi_{31,0}$	.	.	.	1	1	.	1	.	.	.	.	1

<b>(Block 1:)</b>	$\varphi_{13,1}$	$\varphi_{14,0}$	$\varphi_{14,1}$
$1_1 = \chi_{1,0}$	.	.	.
$1_2 = \chi_{1,1}$	.	.	.
$26_1 = \chi_{2+}$	.	.	.
$40_1 = \chi_{4,0}$	.	.	.
$40_2 = \chi_{4,1}$	.	.	.
$65_1 = \chi_{5,0}$	.	.	.
$65_2 = \chi_{5,1}$	.	.	.
$65_3 = \chi_{6,0}$	.	.	.
$65_4 = \chi_{6,1}$	.	.	.
$156_1 = \chi_{7+}$	.	.	.
$90_1 = \chi_{9,0}$	.	.	.
$90_2 = \chi_{9,1}$	.	.	.
$104_1 = \chi_{10,0}$	.	.	.
$104_2 = \chi_{10,1}$	.	.	.
$104_3 = \chi_{11,0}$	.	.	.
$104_4 = \chi_{11,1}$	.	.	.
$104_5 = \chi_{12,0}$	.	.	.
$104_6 = \chi_{12,1}$	.	.	.
$130_1 = \chi_{13,0}$	.	.	.
$130_2 = \chi_{13,1}$	.	.	.
$156_2 = \chi_{14,0}$	.	.	.
$156_3 = \chi_{14,1}$	.	.	.
$416_1 = \chi_{15+}$	.	.	.
$624_1 = \chi_{17+}$	.	.	.
$624_2 = \chi_{19+}$	.	.	.
$650_1 = \chi_{21+}$	.	.	.
$780_1 = \chi_{23+}$	1	.	.
$520_1 = \chi_{25,0}$	1	.	.
$520_2 = \chi_{25,1}$	.	.	.
$520_3 = \chi_{26,0}$	.	.	.
$520_4 = \chi_{26,1}$	.	.	.
$520_5 = \chi_{27,0}$	.	.	1
$520_6 = \chi_{27,1}$	.	1	.
$576_1 = \chi_{28,0}$	.	.	.
$576_2 = \chi_{28,1}$	.	.	.
$576_3 = \chi_{29,0}$	.	.	1
$576_4 = \chi_{29,1}$	.	1	.
$576_5 = \chi_{30,0}$	.	.	.
$576_6 = \chi_{30,1}$	1	.	.
$624_3 = \chi_{31,0}$	.	.	.

(Block 1:)	$\varphi_{1,0}$	$\varphi_{1,1}$	$\varphi_{2,0}$	$\varphi_{2,1}$	$\varphi_{3,0}$	$\varphi_{3,1}$	$\varphi_{4,0}$	$\varphi_{4,1}$	$\varphi_{5,0}$	$\varphi_{5,1}$	$\varphi_{6,0}$	$\varphi_{6,1}$	$\varphi_{7,0}$
$624_4 = \chi_{31,1}$	1	.	1	.	.	1	1	1	1	.	1	1	.
$624_5 = \chi_{32,0}$	.	.	.	1	.	1	.	.	1	.	.	1	.
$624_6 = \chi_{32,1}$	.	.	1	.	1	.	.	.	.	1	1	.	1
$780_2 = \chi_{34,0}$	.	.	.	1	.	1	1	.	.	.	.	1	.
$780_3 = \chi_{34,1}$	.	.	1	.	1	.	.	1	.	.	1	.	1

(Block 1:)	$\varphi_{7,1}$	$\varphi_{8,0}$	$\varphi_{8,1}$	$\varphi_{9,0}$	$\varphi_{9,1}$	$\varphi_{10,0}$	$\varphi_{10,1}$	$\varphi_{11,0}$	$\varphi_{11,1}$	$\varphi_{12,0}$	$\varphi_{12,1}$	$\varphi_{13,0}$
$624_4 = \chi_{31,1}$	.	.	.	1	1	1	.	.	.	.	.	.
$624_5 = \chi_{32,0}$	1	.	.	1	.	1	.	.	.	.	.	.
$624_6 = \chi_{32,1}$	.	.	.	.	1	.	1	.	.	.	.	.
$780_2 = \chi_{34,0}$	1	.	.	2	.	1	.	.	1	.	.	.
$780_3 = \chi_{34,1}$	.	.	.	.	2	.	1	1	.	.	.	.

(Block 1:)	$\varphi_{13,1}$	$\varphi_{14,0}$	$\varphi_{14,1}$
$624_4 = \chi_{31,1}$	1	.	.
$624_5 = \chi_{32,0}$	.	.	1
$624_6 = \chi_{32,1}$	.	1	.
$780_2 = \chi_{34,0}$	.	.	1
$780_3 = \chi_{34,1}$	.	1	.

- $\varphi_{1,0} = 1_1$
- $\varphi_{1,1} = 1_2$
- $\varphi_{2,0} = 5_1$
- $\varphi_{2,1} = 5_2$
- $\varphi_{3,0} = 10_1$
- $\varphi_{3,1} = 10_2$
- $\varphi_{4,0} = 13_1$
- $\varphi_{4,1} = 13_2$
- $\varphi_{5,0} = 30_1$
- $\varphi_{5,1} = 30_2$
- $\varphi_{6,0} = 35_1$
- $\varphi_{6,1} = 35_2$
- $\varphi_{7,0} = 35_3$
- $\varphi_{7,1} = 35_4$
- $\varphi_{8,0} = 55_1$
- $\varphi_{8,1} = 55_2$
- $\varphi_{9,0} = 68_1$
- $\varphi_{9,1} = 68_2$
- $\varphi_{10,0} = 86_1$
- $\varphi_{10,1} = 86_2$
- $\varphi_{11,0} = 105_1$
- $\varphi_{11,1} = 105_2$
- $\varphi_{12,0} = 115_1$
- $\varphi_{12,1} = 115_2$
- $\varphi_{13,0} = 260_1$
- $\varphi_{13,1} = 260_2$
- $\varphi_{14,0} = 355_1$
- $\varphi_{14,1} = 355_2$

<b>Block 4:</b>	$\varphi_{16,0}$	$\varphi_{16,1}$	$\varphi_{17,0}$	$\varphi_{17,1}$	$\varphi_{18,0}$	$\varphi_{18,1}$	$\varphi_{19,0}$	$\varphi_{19,1}$	$\varphi_{20,0}$	$\varphi_{20,1}$	$\varphi_{21,0}$
$24_1 = \chi_{35+}$	.	.	1	1	.	.	.	.	.	.	.
$104_7 = \chi_{37+}$	.	.	.	.	.	.	.	.	1	1	.
$104_8 = \chi_{39,0}$	1	.	.	.	1	.	.	.	.	.	.
$104_9 = \chi_{39,1}$	.	1	.	.	.	1	.	.	.	.	1
$156_4 = \chi_{40,0}$	.	1	.	.	1	.	.	.	1	.	.
$156_5 = \chi_{40,1}$	1	.	.	.	.	1	.	.	.	1	1
$416_2 = \chi_{41+}$	1	1	1	1	.	.	.	.	1	1	.
$520_7 = \chi_{43+}$	1	1	2	2	.	.	1	1	1	1	.
$600_1 = \chi_{45+}$	2	2	1	1	.	.	.	.	.	.	.
$624_7 = \chi_{47+}$	1	1	1	1	.	.	1	1	1	1	.
$416_3 = \chi_{49,0}$	.	2	.	1	.	1	1	.	.	1	1
$416_4 = \chi_{49,1}$	2	.	1	.	1	.	.	1	1	.	.
$936_1 = \chi_{50+}$	2	2	2	2	.	.	1	1	1	1	.
$520_8 = \chi_{52,0}$	.	.	.	.	.	1	.	.	.	.	1
$520_9 = \chi_{52,1}$	.	.	.	.	1	.	.	.	.	.	.
$576_7 = \chi_{53,0}$	.	1	.	1	.	1	1	.	.	.	1
$576_8 = \chi_{53,1}$	1	.	1	.	1	.	.	1	.	.	.
$576_9 = \chi_{54,0}$	1	2	1	2	.	.	.	.	.	2	1
$576_{10} = \chi_{54,1}$	2	1	2	1	.	.	.	.	2	.	.
$576_{11} = \chi_{55,0}$	1	.	1	1	1	.	1	1	1	1	.
$576_{12} = \chi_{55,1}$	.	1	1	1	.	1	1	1	1	1	.
$624_8 = \chi_{56,0}$	1	2	.	2	.	1	1	.	.	2	1
$624_9 = \chi_{56,1}$	2	1	2	.	1	.	.	1	2	.	.
$624_{10} = \chi_{57,0}$	1	2	1	2	.	1	1	1	.	1	1
$624_{11} = \chi_{57,1}$	2	1	2	1	1	.	1	1	1	.	.
$624_{12} = \chi_{58,0}$	2	1	1	1	.	.	.	.	1	1	.
$624_{13} = \chi_{58,1}$	1	2	1	1	.	.	.	.	1	1	.
$624_{14} = \chi_{59,0}$	.	.	.	1	.	1	1	.	.	1	1
$624_{15} = \chi_{59,1}$	.	.	1	.	1	.	.	1	1	.	.
$780_4 = \chi_{60,0}$	1	.	2	.	1	.	.	1	1	.	.
$780_5 = \chi_{60,1}$	.	1	.	2	.	1	1	.	.	1	1

(Block 4:)	$\varphi_{21,1}$	$\varphi_{22,0}$	$\varphi_{22,1}$	$\varphi_{23,0}$	$\varphi_{23,1}$	$\varphi_{24,0}$	$\varphi_{24,1}$	$\varphi_{25,0}$	$\varphi_{25,1}$
$24_1 = \chi_{35+}$	.	.	.	.	.	.	.	.	.
$104_7 = \chi_{37+}$	.	.	.	.	.	.	.	.	.
$104_8 = \chi_{39,0}$	1	.	.	.	.	.	.	.	.
$104_9 = \chi_{39,1}$	.	.	.	.	.	.	.	.	.
$156_4 = \chi_{40,0}$	1	.	.	.	.	.	.	.	.
$156_5 = \chi_{40,1}$	.	.	.	.	.	.	.	.	.
$416_2 = \chi_{41+}$	.	1	1	.	.	.	.	.	.
$520_7 = \chi_{43+}$	.	.	.	1	1	.	.	.	.
$600_1 = \chi_{45+}$	.	2	2	.	.	.	.	.	.
$624_7 = \chi_{47+}$	.	.	.	.	.	1	1	.	.
$416_3 = \chi_{49,0}$	.	.	.	.	.	.	1	.	.
$416_4 = \chi_{49,1}$	1	.	.	.	.	1	.	.	.
$936_1 = \chi_{50+}$	.	1	1	.	.	1	1	.	.
$520_8 = \chi_{52,0}$	.	.	.	.	.	.	.	.	1
$520_9 = \chi_{52,1}$	1	.	.	.	.	.	.	1	.
$576_7 = \chi_{53,0}$	.	.	.	.	.	.	.	.	1
$576_8 = \chi_{53,1}$	1	.	.	.	.	.	.	1	.
$576_9 = \chi_{54,0}$	.	1	.	.	.	.	1	.	.
$576_{10} = \chi_{54,1}$	1	.	1	.	.	1	.	.	.
$576_{11} = \chi_{55,0}$	.	.	.	.	1	1	.	.	.
$576_{12} = \chi_{55,1}$	.	.	.	1	.	.	1	.	.
$624_8 = \chi_{56,0}$	.	1	.	.	.	.	1	.	.
$624_9 = \chi_{56,1}$	1	.	1	.	.	1	.	.	.
$624_{10} = \chi_{57,0}$	.	.	.	1	.	.	1	.	.
$624_{11} = \chi_{57,1}$	1	.	.	.	1	1	.	.	.
$624_{12} = \chi_{58,0}$	.	1	1	.	.	1	.	.	.
$624_{13} = \chi_{58,1}$	.	1	1	.	.	.	1	.	.
$624_{14} = \chi_{59,0}$	.	.	.	.	.	.	.	.	1
$624_{15} = \chi_{59,1}$	1	.	.	.	.	.	.	1	.
$780_4 = \chi_{60,0}$	1	.	.	.	1	.	.	1	.
$780_5 = \chi_{60,1}$	.	.	.	1	.	.	.	.	1

$\varphi_{16,0} = 4_1$	$\varphi_{21,0} = 80_1$
$\varphi_{16,1} = 4_2$	$\varphi_{21,1} = 80_2$
$\varphi_{17,0} = 12_1$	$\varphi_{22,0} = 140_1$
$\varphi_{17,1} = 12_2$	$\varphi_{22,1} = 140_2$
$\varphi_{18,0} = 20_1$	$\varphi_{23,0} = 140_3$
$\varphi_{18,1} = 20_2$	$\varphi_{23,1} = 140_4$
$\varphi_{19,0} = 40_1$	$\varphi_{24,0} = 204_1$
$\varphi_{19,1} = 40_2$	$\varphi_{24,1} = 204_2$
$\varphi_{20,0} = 52_1$	$\varphi_{25,0} = 420_1$
$\varphi_{20,1} = 52_2$	$\varphi_{25,1} = 420_2$