

## $O_{10}^+(2).2 \pmod{31}$

	blocks	defect	matrix
$G :$	1	1	$13 \times 10$
	2	0	$155_1 = \chi_{2,0}, \varphi_{2,0}$
	3	0	$155_2 = \chi_{2,1}, \varphi_{2,1}$
	4	0	$186_1 = \chi_{3,0}, \varphi_{3,0}$
	5	0	$186_2 = \chi_{3,1}, \varphi_{3,1}$
	6	0	$868_1 = \chi_{5,0}, \varphi_{5,0}$
	7	0	$868_2 = \chi_{5,1}, \varphi_{5,1}$
	8	0	$2108_1 = \chi_{6,0}, \varphi_{6,0}$
	9	0	$2108_2 = \chi_{6,1}, \varphi_{6,1}$
	10	0	$5270_1 = \chi_{7,0}, \varphi_{7,0}$
	11	0	$5270_2 = \chi_{7,1}, \varphi_{7,1}$
	12	0	$6324_1 = \chi_{8,0}, \varphi_{8,0}$
	13	0	$6324_2 = \chi_{8,1}, \varphi_{8,1}$
	14	0	$7905_1 = \chi_{9,0}, \varphi_{9,0}$
	15	0	$7905_2 = \chi_{9,1}, \varphi_{9,1}$
	16	0	$9300_1 = \chi_{10,0}, \varphi_{10,0}$
	17	0	$9300_2 = \chi_{10,1}, \varphi_{10,1}$
	18	0	$11067_1 = \chi_{11,0}, \varphi_{11,0}$
	19	0	$11067_2 = \chi_{11,1}, \varphi_{11,1}$
	20	0	$13020_1 = \chi_{12,0}, \varphi_{12,0}$
	21	0	$13020_2 = \chi_{12,1}, \varphi_{12,1}$
	22	0	$13888_1 = \chi_{13,0}, \varphi_{13,0}$
	23	0	$13888_2 = \chi_{13,1}, \varphi_{13,1}$
	24	0	$14756_1 = \chi_{14,0}, \varphi_{14,0}$
	25	0	$14756_2 = \chi_{14,1}, \varphi_{14,1}$
	26	0	$15810_1 = \chi_{15,0}, \varphi_{15,0}$
	27	0	$15810_2 = \chi_{15,1}, \varphi_{15,1}$
	28	0	$18445_1 = \chi_{16,0}, \varphi_{16,0}$
	29	0	$18445_2 = \chi_{16,1}, \varphi_{16,1}$
	30	0	$18445_3 = \chi_{17,0}, \varphi_{17,0}$
	31	0	$18445_4 = \chi_{17,1}, \varphi_{17,1}$
	32	0	$31620_1 = \chi_{19,0}, \varphi_{19,0}$
	33	0	$31620_2 = \chi_{19,1}, \varphi_{19,1}$
	34	0	$31620_3 = \chi_{20,0}, \varphi_{20,0}$
	35	0	$31620_4 = \chi_{20,1}, \varphi_{20,1}$
	36	0	$36890_1 = \chi_{21,0}, \varphi_{21,0}$
	37	0	$36890_2 = \chi_{21,1}, \varphi_{21,1}$
	38	0	$42160_1 = \chi_{22,0}, \varphi_{22,0}$
	39	0	$42160_2 = \chi_{22,1}, \varphi_{22,1}$
	40	0	$50592_1 = \chi_{23,0}, \varphi_{23,0}$

	blocks	defect	matrix
	41	0	$50592_2 = \chi_{23,1}, \varphi_{23,1}$
	42	0	$110670_1 = \chi_{24+}, \varphi_{24+}$
	43	0	$66402_1 = \chi_{26,0}, \varphi_{26,0}$
	44	0	$66402_2 = \chi_{26,1}, \varphi_{26,1}$
	45	0	$73780_1 = \chi_{27,0}, \varphi_{27,0}$
	46	0	$73780_2 = \chi_{27,1}, \varphi_{27,1}$
	47	0	$73780_3 = \chi_{28,0}, \varphi_{28,0}$
	48	0	$73780_4 = \chi_{28,1}, \varphi_{28,1}$
	49	0	$73780_5 = \chi_{29,0}, \varphi_{29,0}$
	50	0	$73780_6 = \chi_{29,1}, \varphi_{29,1}$
	51	0	$101184_1 = \chi_{30,0}, \varphi_{30,0}$
	52	0	$101184_2 = \chi_{30,1}, \varphi_{30,1}$
	53	0	$110670_2 = \chi_{31,0}, \varphi_{31,0}$
	54	0	$110670_3 = \chi_{31,1}, \varphi_{31,1}$
	55	0	$110670_4 = \chi_{32,0}, \varphi_{32,0}$
	56	0	$110670_5 = \chi_{32,1}, \varphi_{32,1}$
	57	0	$221340_1 = \chi_{33+}, \varphi_{33+}$
	58	0	$147560_1 = \chi_{35,0}, \varphi_{35,0}$
	59	0	$147560_2 = \chi_{35,1}, \varphi_{35,1}$
	60	0	$147560_3 = \chi_{36,0}, \varphi_{36,0}$
	61	0	$147560_4 = \chi_{36,1}, \varphi_{36,1}$
	62	0	$148800_1 = \chi_{37,0}, \varphi_{37,0}$
	63	0	$148800_2 = \chi_{37,1}, \varphi_{37,1}$
	64	0	$158100_1 = \chi_{38,0}, \varphi_{38,0}$
	65	0	$158100_2 = \chi_{38,1}, \varphi_{38,1}$
	66	0	$166005_1 = \chi_{39,0}, \varphi_{39,0}$
	67	0	$166005_2 = \chi_{39,1}, \varphi_{39,1}$
	68	0	$166005_3 = \chi_{40,0}, \varphi_{40,0}$
	69	0	$166005_4 = \chi_{40,1}, \varphi_{40,1}$
	70	0	$166005_5 = \chi_{41,0}, \varphi_{41,0}$
	71	0	$166005_6 = \chi_{41,1}, \varphi_{41,1}$
	72	0	$168640_1 = \chi_{42,0}, \varphi_{42,0}$
	73	0	$168640_2 = \chi_{42,1}, \varphi_{42,1}$
	74	0	$208320_1 = \chi_{43,0}, \varphi_{43,0}$
	75	0	$208320_2 = \chi_{43,1}, \varphi_{43,1}$
	76	0	$221340_2 = \chi_{44,0}, \varphi_{44,0}$
	77	0	$221340_3 = \chi_{44,1}, \varphi_{44,1}$
	78	0	$221340_4 = \chi_{45,0}, \varphi_{45,0}$
	79	0	$221340_5 = \chi_{45,1}, \varphi_{45,1}$
	80	0	$236096_1 = \chi_{46,0}, \varphi_{46,0}$

	blocks	defect	matrix
	81	0	$236096_2 = \chi_{46,1}, \varphi_{46,1}$
	82	0	$265608_1 = \chi_{47,0}, \varphi_{47,0}$
	83	0	$265608_2 = \chi_{47,1}, \varphi_{47,1}$
	84	0	$298809_1 = \chi_{48,0}, \varphi_{48,0}$
	85	0	$298809_2 = \chi_{48,1}, \varphi_{48,1}$
	86	0	$316200_1 = \chi_{49,0}, \varphi_{49,0}$
	87	0	$316200_2 = \chi_{49,1}, \varphi_{49,1}$
	88	0	$332010_1 = \chi_{50,0}, \varphi_{51,0}$
	89	0	$332010_2 = \chi_{50,1}, \varphi_{51,1}$
	90	0	$664020_1 = \chi_{51+}, \varphi_{52+}$
	91	0	$337280_1 = \chi_{53,0}, \varphi_{54,0}$
	92	0	$337280_2 = \chi_{53,1}, \varphi_{54,1}$
	93	0	$355725_1 = \chi_{55,0}, \varphi_{55,0}$
	94	0	$355725_2 = \chi_{55,1}, \varphi_{55,1}$
	95	0	$355725_3 = \chi_{56,0}, \varphi_{56,0}$
	96	0	$355725_4 = \chi_{56,1}, \varphi_{56,1}$
	97	0	$711450_1 = \chi_{57+}, \varphi_{57+}$
	98	0	$368900_1 = \chi_{59,0}, \varphi_{59,0}$
	99	0	$368900_2 = \chi_{59,1}, \varphi_{59,1}$
	100	0	$439425_1 = \chi_{60,0}, \varphi_{60,0}$
	101	0	$439425_2 = \chi_{60,1}, \varphi_{60,1}$
	102	0	$439425_3 = \chi_{61,0}, \varphi_{61,0}$
	103	0	$439425_4 = \chi_{61,1}, \varphi_{61,1}$
	104	0	$878850_1 = \chi_{62+}, \varphi_{62+}$
	105	0	$878850_2 = \chi_{64+}, \varphi_{64+}$
	106	0	$442680_1 = \chi_{66,0}, \varphi_{66,0}$
	107	0	$442680_2 = \chi_{66,1}, \varphi_{66,1}$
	108	0	$442680_3 = \chi_{67,0}, \varphi_{67,0}$
	109	0	$442680_4 = \chi_{67,1}, \varphi_{67,1}$
	110	0	$885360_1 = \chi_{68+}, \varphi_{68+}$
	111	0	$996030_1 = \chi_{70+}, \varphi_{70+}$
	112	0	$505920_1 = \chi_{72,0}, \varphi_{72,0}$
	113	0	$505920_2 = \chi_{72,1}, \varphi_{72,1}$
	114	0	$539648_1 = \chi_{73,0}, \varphi_{73,0}$
	115	0	$539648_2 = \chi_{73,1}, \varphi_{73,1}$
	116	0	$590240_1 = \chi_{74,0}, \varphi_{74,0}$
	117	0	$590240_2 = \chi_{74,1}, \varphi_{74,1}$
	118	0	$634880_1 = \chi_{75,0}, \varphi_{75,0}$
	119	0	$634880_2 = \chi_{75,1}, \varphi_{75,1}$
	120	0	$664020_2 = \chi_{76,0}, \varphi_{76,0}$

	blocks	defect	matrix
	121	0	$664020_3 = \chi_{76,1}, \varphi_{76,1}$
	122	0	$664020_4 = \chi_{77,0}, \varphi_{77,0}$
	123	0	$664020_5 = \chi_{77,1}, \varphi_{77,1}$
	124	0	$708288_1 = \chi_{78,0}, \varphi_{78,0}$
	125	0	$708288_2 = \chi_{78,1}, \varphi_{78,1}$
	126	0	$1422900_1 = \chi_{79+}, \varphi_{79+}$
	127	0	$1422900_2 = \chi_{81+}, \varphi_{81+}$
	128	0	$761856_1 = \chi_{89,0}, \varphi_{84,0}$
	129	0	$761856_2 = \chi_{89,1}, \varphi_{84,1}$
	130	0	$830025_1 = \chi_{90,0}, \varphi_{85,0}$
	131	0	$830025_2 = \chi_{90,1}, \varphi_{85,1}$
	132	0	$885360_2 = \chi_{91,0}, \varphi_{86,0}$
	133	0	$885360_3 = \chi_{91,1}, \varphi_{86,1}$
	134	0	$1011840_1 = \chi_{92,0}, \varphi_{87,0}$
	135	0	$1011840_2 = \chi_{92,1}, \varphi_{87,1}$
	136	0	$1180480_1 = \chi_{94,0}, \varphi_{88,0}$
	137	0	$1180480_2 = \chi_{94,1}, \varphi_{88,1}$
	138	0	$1195236_1 = \chi_{95,0}, \varphi_{89,0}$
	139	0	$1195236_2 = \chi_{95,1}, \varphi_{89,1}$
	140	0	$1422900_3 = \chi_{96,0}, \varphi_{90,0}$
	141	0	$1422900_4 = \chi_{96,1}, \varphi_{90,1}$
	142	0	$1494045_1 = \chi_{97,0}, \varphi_{91,0}$
	143	0	$1494045_2 = \chi_{97,1}, \varphi_{91,1}$

<b>Block 1:</b>	$\varphi_{1,0}$	$\varphi_{1,1}$	$\varphi_{4,0}$	$\varphi_{4,1}$	$\varphi_{18,0}$	$\varphi_{18,1}$	$\varphi_{50,0}$	$\varphi_{50,1}$	$\varphi_{83,0}$	$\varphi_{83,1}$
$1_1 = \chi_{1,0}$	1	.	.	.	.	.	.	.	.	.
$1_2 = \chi_{1,1}$	.	1	.	.	.	.	.	.	.	.
$340_1 = \chi_{4,0}$	1	.	1	.	.	.	.	.	.	.
$340_2 = \chi_{4,1}$	.	1	.	1	.	.	.	.	.	.
$22848_1 = \chi_{18,0}$	.	.	1	.	1	.	.	.	.	.
$22848_2 = \chi_{18,1}$	.	.	.	1	.	1	.	.	.	.
$348160_1 = \chi_{54,0}$	.	.	.	.	1	.	1	.	.	.
$348160_2 = \chi_{54,1}$	.	.	.	.	.	1	.	1	.	.
$1445850_1 = \chi_{83+}$	.	.	.	.	.	.	.	.	1	1
$1445850_2 = \chi_{85+}$	.	.	.	.	.	.	.	.	1	1
$1445850_3 = \chi_{87+}$	.	.	.	.	.	.	.	.	1	1
$1048576_1 = \chi_{93,0}$	.	.	.	.	.	.	1	.	1	.
$1048576_2 = \chi_{93,1}$	.	.	.	.	.	.	.	1	.	1

$$\begin{array}{ll} \varphi_{1,0} = 1_1 & \varphi_{18,1} = 22509_2 \\ \varphi_{1,1} = 1_2 & \varphi_{50,0} = 325651_1 \\ \varphi_{4,0} = 339_1 & \varphi_{50,1} = 325651_2 \\ \varphi_{4,1} = 339_2 & \varphi_{83,0} = 722925_1 \\ \varphi_{18,0} = 22509_1 & \varphi_{83,1} = 722925_2 \end{array}$$