

Character Tables of Multiplicity-Free Endomorphism Rings

$G = 3.M_{22}$ (no. 3)

$H = 2^3 : L_3(2) \rightarrow (M_{22}, 7)$

rank: 13

degree: 990

	O_1	O_2	O_3	O_4	O_5	O_6
$1a$	1	1	1	7	7	7
$21a$	1	1	1	-4	-4	-4
$55a$	1	1	1	4	4	4
$99a$	1	1	1	-3	-3	-3
$154a$	1	1	1	1	1	1
$21b$	1	$z3$	$z3^{**}$	5	$5z3^{**}$	$5z3$
$21c$	1	$z3^{**}$	$z3$	5	$5z3$	$5z3^{**}$
$99b$	1	$z3$	$z3^{**}$	0	0	0
$99c$	1	$z3^{**}$	$z3$	0	0	0
$105a$	1	$z3$	$z3^{**}$	$b33^*$	$1-v33-2v33^*5$	$v33+v33^*5-v33^*7$
$105b$	1	$z3^{**}$	$z3$	$b33$	$1-2v33-v33^*5$	$-+2v33+2v33^*5+v33^*7$
$105c$	1	$z3$	$z3^{**}$	$b33$	$-+2v33+2v33^*5+v33^*7$	$1-2v33-v33^*5$
$105d$	1	$z3^{**}$	$z3$	$b33^*$	$v33+v33^*5-v33^*7$	$1-v33-2v33^*5$

	O_7	O_8	O_9	O_{10}
$1a$	42	42	42	168
$21a$	9	9	9	-30
$55a$	9	9	9	-6
$99a$	2	2	2	8
$154a$	-6	-6	-6	0
$21b$	18	$18z3^{**}$	$18z3$	24
$21c$	18	$18z3$	$18z3^{**}$	24
$99b$	-7	$-7z3^{**}$	$-7z3$	14
$99c$	-7	$-7z3$	$-7z3^{**}$	14
$105a$	$2+b33$	$-+2v33^*5-v33^*7$	$-v33^*5+2v33^*7$	$-9+r33$
$105b$	$2+b33^*$	$-2+3v33+v33^*5+v33^*7$	$1-3v33-2v33^*5-2v33^*7$	$-9-r33$
$105c$	$2+b33^*$	$1-3v33-2v33^*5-2v33^*7$	$-2+3v33+v33^*5+v33^*7$	$-9-r33$
$105d$	$2+b33$	$-v33^*5+2v33^*7$	$-+2v33^*5-v33^*7$	$-9+r33$

		O_{11}	O_{12}	O_{13}
$1a$		168	168	336
$21a$		-30	-30	72
$55a$		-6	-6	-24
$99a$		8	8	-24
$154a$		0	0	12
$21b$		$24z3$	$24z3^{**}$	0
$21c$		$24z3^{**}$	$24z3$	0
$99b$		$14z3$	$14z3^{**}$	0
$99c$		$14z3^{**}$	$14z3$	0
$105a$	$10-12v33-2v33^*5-8v33^*7$	$-2+12v33+4v33^*5+10v33^*7$		0
$105b$	$2+6v33-4v33^*5+8v33^*7$	$8-6v33+2v33^*5-10v33^*7$		0
$105c$	$8-6v33+2v33^*5-10v33^*7$	$2+6v33-4v33^*5+8v33^*7$		0
$105d$	$-2+12v33+4v33^*5+10v33^*7$	$10-12v33-2v33^*5-8v33^*7$		0

$$b33 = (-1 + \text{Sqrt}(33))/2$$

$$b33^* = (-1 - \text{Sqrt}(33))/2$$

$$r33 = \text{Sqrt}(33)$$

$$v33 = z33 + z33^4 + z33^{16} + z33^{25} + z33^{31}$$

$$z3 = (-1 + \sqrt{-3})/2$$

$$z3^{**} = (-1 - \sqrt{-3})/2$$

References

[Lin] S. A. Linton. private communication.