

Character Tables of Multiplicity-Free Endomorphism Rings

$G = 6.M_{22}$ (no. 1)

$H = 2^4 : A_5 \rightarrow (2.M_{22}, 1), (3.M_{22}, 1)$

rank: 22

degree: 2772

	O_1	O_2	O_3	O_4	O_5	O_6	O_7	O_8
$1a$	1	1	1	1	1	1	30	96
$21a$	1	1	1	1	1	1	30	-36
$55a$	1	1	1	1	1	1	30	12
$154a$	1	1	1	1	1	1	-6	0
$231a$	1	1	1	1	1	1	-6	0
$126a$	1	-1	1	-1	1	-1	0	4i11
$126b$	1	-1	1	-1	1	-1	0	-4i11
$210b$	1	-1	1	-1	1	-1	0	0
$21b$	1	z3	z3**	1	z3	z3**	0	-24
$21c$	1	z3**	z3	1	z3**	z3	0	-24
$105a$	1	z3	z3**	1	z3	z3**	0	9+r33
$105b$	1	z3**	z3	1	z3**	z3	0	9-r33
$105c$	1	z3	z3**	1	z3	z3**	0	9-r33
$105d$	1	z3**	z3	1	z3**	z3	0	9+r33
$231b$	1	z3	z3**	1	z3	z3**	0	-6
$231c$	1	z3**	z3	1	z3**	z3	0	-6
$126c$	1	-z3	z3**	-1	z3	-z3**	0	-4+8v33-2v33*5+10v33*7
$126d$	1	-z3**	z3	-1	z3**	-z3	0	6-12v33-2v33*5-10v33*7
$126e$	1	-z3	z3**	-1	z3	-z3**	0	-6+12v33+2v33*5+10v33*7
$126f$	1	-z3**	z3	-1	z3**	-z3	0	4-8v33+2v33*5-10v33*7
$210e$	1	-z3	z3**	-1	z3	-z3**	0	6+12z3**
$210f$	1	-z3**	z3	-1	z3**	-z3	0	6+12z3

	O_9	O_{10}
$1a$	96	96
$21a$	-36	-36
$55a$	12	12
$154a$	0	0
$231a$	0	0
$126a$	4i11	4i11
$126b$	-4i11	-4i11
$210b$	0	0
$21b$	-24z3	-24z3**
$21c$	-24z3**	-24z3
$105a$	-8+6v33-2v33*5+10v33*7	-2-6v33+4v33*5-8v33*7
$105b$	2-12v33-4v33*5-10v33*7	-10+12v33+2v33*5+8v33*7
$105c$	-10+12v33+2v33*5+8v33*7	2-12v33-4v33*5-10v33*7
$105d$	-2-6v33+4v33*5-8v33*7	-8+6v33-2v33*5+10v33*7
$231b$	-6z3	-6z3**
$231c$	-6z3**	-6z3
$126c$	-6-4v33+2v33*5-4v33*7	10-4v33-6v33*7
$126d$	-10+6v33+4v33*7	4+6v33+2v33*5+6v33*7
$126e$	-4-6v33-2v33*5-6v33*7	10-6v33-4v33*7
$126f$	-10+4v33+6v33*7	6+4v33-2v33*5+4v33*7
$210e$	12+6z3	-6+6z3
$210f$	12+6z3**	-6+6z3**

	O_{11}	O_{12}
$1a$	96	96
$21a$	-36	-36
$55a$	12	12
$154a$	0	0
$231a$	0	0
$126a$	-4i11	-4i11
$126b$	4i11	4i11
$210b$	0	0
$21b$	-24	-24z3
$21c$	-24	-24z3**
$105a$	9+r33	-8+6v33-2v33*5+10v33*7
$105b$	9-r33	2-12v33-4v33*5-10v33*7
$105c$	9-r33	-10+12v33+2v33*5+8v33*7
$105d$	9+r33	-2-6v33+4v33*5-8v33*7
$231b$	-6	-6z3
$231c$	-6	-6z3**
$126c$	4-8v33+2v33*5-10v33*7	6+4v33-2v33*5+4v33*7
$126d$	-6+12v33+2v33*5+10v33*7	10-6v33-4v33*7
$126e$	6-12v33-2v33*5-10v33*7	4+6v33+2v33*5+6v33*7
$126f$	-4+8v33-2v33*5+10v33*7	10-4v33-6v33*7
$210e$	6+12z3	-6+6z3**
$210f$	6+12z3**	-6+6z3

	O_{13}	O_{14}	O_{15}
$1a$	96	120	120
$21a$	-36	10	10
$55a$	12	-6	-6
$154a$	0	12	12
$231a$	0	-8	-8
$126a$	-4i11	-10	10
$126b$	4i11	-10	10
$210b$	0	12	-12
$21b$	-24z3**	40	40z3
$21c$	-24z3	40	40z3**
$105a$	-2-6v33+4v33*5-8v33*7	-3b33*	-3v33-3v33*5+3v33*7
$105b$	-10+12v33+2v33*5+8v33*7	-3b33	3-6v33-6v33*5-3v33*7
$105c$	2-12v33-4v33*5-10v33*7	-3b33	-3+6v33+3v33*5
$105d$	-8+6v33-2v33*5+10v33*7	-3b33*	-3+3v33+6v33*5
$231b$	-6z3**	-5	-5z3
$231c$	-6z3	-5	-5z3**
$126c$	-10+4v33+6v33*7	5b33	-5+10v33+5v33*5
$126d$	-4-6v33-2v33*5-6v33*7	5b33*	-5+5v33+10v33*5
$126e$	-10+6v33+4v33*7	5b33*	-5v33-5v33*5+5v33*7
$126f$	-6-4v33+2v33*5-4v33*7	5b33	5-10v33-10v33*5-5v33*7
$210e$	12+6z3**	3	-3z3
$210f$	12+6z3	3	-3z3**

	O_{16}	O_{17}	O_{18}
$1a$	120	120	120
$21a$	10	10	10
$55a$	-6	-6	-6
$154a$	12	12	12
$231a$	-8	-8	-8
$126a$	-10	10	-10
$126b$	-10	10	-10
$210b$	12	-12	12
$21b$	$40z3^{**}$	40	$40z3$
$21c$	$40z3$	40	$40z3^{**}$
$105a$	$-3+3v33+6v33^*5$	$-3b33^*$	$-3v33-3v33^*5+3v33^*7$
$105b$	$-3+6v33+3v33^*5$	$-3b33$	$3-6v33-6v33^*5-3v33^*7$
$105c$	$3-6v33-6v33^*5-3v33^*7$	$-3b33$	$-3+6v33+3v33^*5$
$105d$	$-3v33-3v33^*5+3v33^*7$	$-3b33^*$	$-3+3v33+6v33^*5$
$231b$	$-5z3^{**}$	-5	$-5z3$
$231c$	$-5z3$	-5	$-5z3^{**}$
$126c$	$-5+10v33+10v33^*5+5v33^*7$	$-5b33$	$5-10v33-5v33^*5$
$126d$	$5v33+5v33^*5-5v33^*7$	$-5b33^*$	$5-5v33-10v33^*5$
$126e$	$5-5v33-10v33^*5$	$-5b33^*$	$5v33+5v33^*5-5v33^*7$
$126f$	$5-10v33-5v33^*5$	$-5b33$	$-5+10v33+10v33^*5+5v33^*7$
$210e$	$3z3^{**}$	-3	$3z3$
$210f$	$3z3$	-3	$3z3^{**}$

		O_{19}	O_{20}	O_{21}
$1a$		120	480	480
$21a$		10	40	40
$55a$		-6	-24	-24
$154a$		12	-24	-24
$231a$		-8	16	16
$126a$		10	0	0
$126b$		10	0	0
$210b$		-12	0	0
$21b$		$40z3^{**}$	40	$40z3$
$21c$		$40z3$	40	$40z3^{**}$
$105a$	$-3+3v33+6v33^*5$	$18-6r33$	$-24+36v33+12v33^*5+12v33^*7$	
$105b$	$-3+6v33+3v33^*5$	$18+6r33$	$-12+24v33^*5-12v33^*7$	
$105c$	$3-6v33-6v33^*5-3v33^*7$	$18+6r33$	$-12-12v33^*5+24v33^*7$	
$105d$	$-3v33-3v33^*5+3v33^*7$	$18-6r33$	$12-36v33-24v33^*5-24v33^*7$	
$231b$	$-5z3^{**}$	-20	$-20z3$	
$231c$	$-5z3$	-20	$-20z3^{**}$	
$126c$	$5-10v33-10v33^*5-5v33^*7$	0	0	
$126d$	$-5v33-5v33^*5+5v33^*7$	0	0	
$126e$	$-5+5v33+10v33^*5$	0	0	
$126f$	$-5+10v33+5v33^*5$	0	0	
$210e$	$-3z3^{**}$	0	0	
$210f$	$-3z3$	0	0	

	O_{22}
$1a$	480
$21a$	40
$55a$	-24
$154a$	-24
$231a$	16
$126a$	0
$126b$	0
$210b$	0
$21b$	$40z3^{**}$
$21c$	$40z3$
$105a$	$12-36v33-24v33^*5-24v33^*7$
$105b$	$-12-12v33^*5+24v33^*7$
$105c$	$-12+24v33^*5-12v33^*7$
$105d$	$-24+36v33+12v33^*5+12v33^*7$
$231b$	$-20z3^{**}$
$231c$	$-20z3$
$126c$	0
$126d$	0
$126e$	0
$126f$	0
$210e$	0
$210f$	0

$$-3b33 = (3 - 3 * Sqrt(33))/2$$

$$-3b33^* = (3 + 3 * Sqrt(33))/2$$

$$-5b33 = (5 - 5 * Sqrt(33))/2$$

$$-5b33^* = (5 + 5 * Sqrt(33))/2$$

$$5b33 = (-5 + 5 * Sqrt(33))/2$$

$$5b33^* = (-5 - 5 * Sqrt(33))/2$$

$$i11 = Sqrt(-11)$$

$$r33 = Sqrt(33)$$

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

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

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

References

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