

## $M_{22} \pmod{5}$

|                 | blocks          | defect | matrix                            |
|-----------------|-----------------|--------|-----------------------------------|
| $G :$           | 1               | 1      | $5 \times 4$                      |
|                 | 2               | 0      | $45_1 = \chi_3, \varphi_3$        |
|                 | $3 = \bar{2}$   | 0      | $45_2 = \chi_4, \varphi_4$        |
|                 | 4               | 0      | $55_1 = \chi_5, \varphi_5$        |
|                 | 5               | 0      | $210_1 = \chi_8, \varphi_8$       |
|                 | 6               | 0      | $280_1 = \chi_{10}, \varphi_9$    |
|                 | $7 = \bar{6}$   | 0      | $280_2 = \chi_{11}, \varphi_{10}$ |
|                 | 8               | 0      | $385_1 = \chi_{12}, \varphi_{11}$ |
| $2.G :$         | 9               | 0      | $10_1 = \chi_{13}, \varphi_{12}$  |
|                 | $10 = \bar{9}$  | 0      | $10_2 = \chi_{14}, \varphi_{13}$  |
|                 | 11              | 1      | $5 \times 4$                      |
|                 | 12              | 0      | $120_1 = \chi_{16}, \varphi_{16}$ |
|                 | 13              | 0      | $210_2 = \chi_{21}, \varphi_{19}$ |
|                 | 14              | 0      | $330_1 = \chi_{22}, \varphi_{20}$ |
|                 | 15              | 0      | $440_1 = \chi_{23}, \varphi_{21}$ |
|                 | $4.G :$         | 16     | 1                                 |
| $17 = 16^*$     |                 |        |                                   |
| 18              |                 | 0      | $160_1 = \chi_{28}, \varphi_{26}$ |
| $19 = 18^*$     |                 |        |                                   |
| $20 = \bar{19}$ |                 | 0      | $160_3 = \chi_{29}, \varphi_{27}$ |
| $21 = 20^*$     |                 |        |                                   |
| 22              |                 | 0      | $560_1 = \chi_{31}, \varphi_{28}$ |
| $23 = 22^*$     |                 |        |                                   |
| $3.G :$         | 24              | 1      | $5 \times 4$                      |
|                 | $25 = 24^*$     |        |                                   |
|                 | 26              | 0      | $45_3 = \chi_{33}, \varphi_{30}$  |
|                 | $27 = 26^*$     |        |                                   |
|                 | $28 = \bar{27}$ | 0      | $45_5 = \chi_{34}, \varphi_{31}$  |
|                 | $29 = 28^*$     |        |                                   |
|                 | 30              | 0      | $105_1 = \chi_{36}, \varphi_{33}$ |
| $31 = 30^*$     |                 |        |                                   |

|                | blocks          | defect                            | matrix                            |
|----------------|-----------------|-----------------------------------|-----------------------------------|
|                | $32 = \bar{31}$ | 0                                 | $105_3 = \chi_{37}, \varphi_{34}$ |
|                | $33 = 32^*$     |                                   |                                   |
|                | 34              | 0                                 | $210_3 = \chi_{38}, \varphi_{36}$ |
|                | $35 = 34^*$     |                                   |                                   |
|                | 36              | 0                                 | $330_2 = \chi_{41}, \varphi_{38}$ |
|                | $37 = 36^*$     |                                   |                                   |
| $6.G :$        | 38              | 1                                 | $5 \times 4$                      |
|                | $39 = 38^*$     |                                   |                                   |
|                | 40              | 0                                 | $120_2 = \chi_{45}, \varphi_{41}$ |
|                | $41 = 40^*$     |                                   |                                   |
|                | 42              | 0                                 | $210_5 = \chi_{48}, \varphi_{44}$ |
|                | $43 = 42^*$     |                                   |                                   |
|                | 44              | 0                                 | $210_7 = \chi_{49}, \varphi_{45}$ |
|                | $45 = 44^*$     |                                   |                                   |
|                | $46 = \bar{45}$ | 0                                 | $210_9 = \chi_{50}, \varphi_{46}$ |
|                | $47 = 46^*$     |                                   |                                   |
| 48             | 0               | $330_4 = \chi_{51}, \varphi_{47}$ |                                   |
| $49 = 48^*$    |                 |                                   |                                   |
| $12.G :$       | 50              | 0                                 | $120_4 = \chi_{53}, \varphi_{49}$ |
|                | $51 = 50 * 5$   |                                   |                                   |
|                | $52 = 50 * 7$   |                                   |                                   |
|                | $53 = 50 * 11$  |                                   |                                   |
|                | 54              | 0                                 | $120_8 = \chi_{54}, \varphi_{50}$ |
|                | $55 = 54 * 5$   |                                   |                                   |
|                | $56 = 54 * 7$   |                                   |                                   |
|                | $57 = 54 * 11$  |                                   |                                   |
|                | 58              | 1                                 | $5 \times 4$                      |
|                | $59 = 58 * 5$   |                                   |                                   |
|                | $60 = 58 * 7$   |                                   |                                   |
| $61 = 58 * 11$ |                 |                                   |                                   |

| <b>Block 1:</b>  | $\varphi_1$ | $\varphi_2$ | $\varphi_6$ | $\varphi_7$ |
|------------------|-------------|-------------|-------------|-------------|
| $1_1 = \chi_1$   | 1           | .           | .           | .           |
| $21_1 = \chi_2$  | .           | 1           | .           | .           |
| $99_1 = \chi_6$  | 1           | .           | 1           | .           |
| $154_1 = \chi_7$ | .           | 1           | .           | 1           |
| $231_1 = \chi_9$ | .           | .           | 1           | 1           |

$$\begin{aligned}\varphi_1 &= 1_1 \\ \varphi_2 &= 21_1 \\ \varphi_6 &= 98_1 \\ \varphi_7 &= 133_1\end{aligned}$$

| <b>Block 11:</b>    | $\varphi_{14}$ | $\varphi_{15}$ | $\varphi_{17}$ | $\varphi_{18}$ |
|---------------------|----------------|----------------|----------------|----------------|
| $56_1 = \chi_{15}$  | 1              | 1              | .              | .              |
| $126_1 = \chi_{17}$ | .              | .              | 1              | .              |
| $126_2 = \chi_{18}$ | .              | .              | .              | 1              |
| $154_2 = \chi_{19}$ | 1              | .              | 1              | .              |
| $154_3 = \chi_{20}$ | .              | 1              | .              | 1              |

$$\begin{aligned}\varphi_{14} &= 28_1 \\ \varphi_{15} &= 28_2 \\ \varphi_{17} &= 126_1 \\ \varphi_{18} &= 126_2\end{aligned}$$

| <b>Blocks 16, 17:</b> | $\varphi_{22}$ | $\varphi_{23}$ | $\varphi_{24}$ | $\varphi_{25}$ |
|-----------------------|----------------|----------------|----------------|----------------|
| $56_2 = \chi_{24}$    | 1              | .              | .              | .              |
| $56_4 = \chi_{25}$    | .              | 1              | .              | .              |
| $144_1 = \chi_{26}$   | 1              | .              | 1              | .              |
| $144_3 = \chi_{27}$   | .              | 1              | .              | 1              |
| $176_1 = \chi_{30}$   | .              | .              | 1              | 1              |

$$\begin{aligned}\varphi_{22} &= 56_1 \\ \varphi_{23} &= 56_3 \\ \varphi_{24} &= 88_1 \\ \varphi_{25} &= 88_3\end{aligned}$$

| <b>Blocks 24, 25:</b> | $\varphi_{29}$ | $\varphi_{32}$ | $\varphi_{35}$ | $\varphi_{37}$ |
|-----------------------|----------------|----------------|----------------|----------------|
| $21_2 = \chi_{32}$    | 1              | .              | .              | .              |
| $99_2 = \chi_{35}$    | 1              | 1              | .              | .              |
| $231_2 = \chi_{39}$   | .              | .              | .              | 1              |
| $231_4 = \chi_{40}$   | .              | 1              | 1              | .              |
| $384_1 = \chi_{42}$   | .              | .              | 1              | 1              |

$$\begin{aligned}\varphi_{29} &= 21_2 \\ \varphi_{32} &= 78_1 \\ \varphi_{35} &= 153_1 \\ \varphi_{37} &= 231_1\end{aligned}$$

| <b>Blocks 38, 39:</b> | $\varphi_{39}$ | $\varphi_{40}$ | $\varphi_{42}$ | $\varphi_{43}$ |
|-----------------------|----------------|----------------|----------------|----------------|
| $66_1 = \chi_{43}$    | 1              | .              | .              | .              |
| $66_3 = \chi_{44}$    | .              | 1              | .              | .              |
| $126_3 = \chi_{46}$   | .              | .              | 1              | .              |
| $126_5 = \chi_{47}$   | .              | .              | .              | 1              |
| $384_3 = \chi_{52}$   | 1              | 1              | 1              | 1              |

$$\begin{aligned}\varphi_{39} &= 66_1 \\ \varphi_{40} &= 66_3 \\ \varphi_{42} &= 126_3 \\ \varphi_{43} &= 126_5\end{aligned}$$

| <b>Blocks 58, 59, 60, 61:</b> | $\varphi_{48}$ | $\varphi_{51}$ | $\varphi_{52}$ | $\varphi_{53}$ |
|-------------------------------|----------------|----------------|----------------|----------------|
| $144_5 = \chi_{55}$           | .              | 1              | .              | .              |
| $144_9 = \chi_{56}$           | .              | .              | 1              | .              |
| $336_1 = \chi_{57}$           | .              | .              | .              | 1              |
| $336_5 = \chi_{58}$           | 1              | 1              | 1              | .              |
| $384_5 = \chi_{59}$           | 1              | .              | .              | 1              |

$$\begin{aligned} \varphi_{48} &= 48_1 \\ \varphi_{51} &= 144_1 \\ \varphi_{52} &= 144_5 \\ \varphi_{53} &= 336_1 \end{aligned}$$