

$Co_1 \pmod{7}$

|       | blocks          | defect | matrix                                  |
|-------|-----------------|--------|-----------------------------------------|
| $G :$ | 1               | 2      | $27 \times 21$                          |
|       | 2               | 1      | $7 \times 6$                            |
|       | 3               | 1      | $7 \times 6$                            |
|       | 4               | 1      | $7 \times 6$                            |
|       | 5               | 1      | $7 \times 6$                            |
|       | 6               | 1      | $7 \times 6$                            |
|       | 7               | 0      | $644644_1 = \chi_{16}, \varphi_{16}$    |
|       | 8               | 0      | $673750_1 = \chi_{17}, \varphi_{17}$    |
|       | $9 = \bar{8}$   | 0      | $673750_2 = \chi_{18}, \varphi_{18}$    |
|       | 10              | 0      | $1450449_1 = \chi_{22}, \varphi_{23}$   |
|       | 11              | 0      | $2417415_1 = \chi_{26}, \varphi_{26}$   |
|       | 12              | 0      | $2464749_1 = \chi_{27}, \varphi_{27}$   |
|       | $13 = \bar{12}$ | 0      | $2464749_2 = \chi_{28}, \varphi_{28}$   |
|       | 14              | 0      | $5494125_1 = \chi_{32}, \varphi_{33}$   |
|       | 15              | 0      | $5801796_1 = \chi_{33}, \varphi_{34}$   |
|       | 16              | 0      | $9669660_1 = \chi_{36}, \varphi_{36}$   |
|       | 17              | 0      | $20083140_1 = \chi_{39}, \varphi_{42}$  |
|       | 18              | 0      | $23244375_1 = \chi_{43}, \varphi_{44}$  |
|       | 19              | 0      | $24174150_1 = \chi_{44}, \varphi_{45}$  |
|       | 20              | 0      | $24794000_1 = \chi_{46}, \varphi_{46}$  |
|       | 21              | 0      | $40166280_1 = \chi_{49}, \varphi_{51}$  |
|       | 22              | 0      | $51571520_1 = \chi_{53}, \varphi_{54}$  |
|       | 23              | 0      | $60435375_1 = \chi_{56}, \varphi_{56}$  |
|       | 24              | 0      | $65270205_1 = \chi_{57}, \varphi_{58}$  |
|       | 25              | 0      | $100725625_1 = \chi_{63}, \varphi_{62}$ |
|       | 26              | 0      | $109882500_1 = \chi_{65}, \varphi_{65}$ |
|       | 27              | 0      | $185955000_1 = \chi_{70}, \varphi_{68}$ |
|       | 28              | 0      | $201451250_1 = \chi_{72}, \varphi_{69}$ |
|       | 29              | 0      | $205395750_1 = \chi_{73}, \varphi_{70}$ |
|       | 30              | 0      | $210974400_1 = \chi_{75}, \varphi_{72}$ |
|       | 31              | 0      | $241741500_1 = \chi_{78}, \varphi_{74}$ |
|       | 32              | 0      | $247235625_1 = \chi_{79}, \varphi_{75}$ |
|       | 33              | 0      | $257857600_1 = \chi_{81}, \varphi_{77}$ |
|       | 34              | 0      | $267014475_1 = \chi_{83}, \varphi_{78}$ |
|       | 35              | 0      | $280280000_1 = \chi_{84}, \varphi_{79}$ |
|       | 36              | 0      | $302176875_1 = \chi_{87}, \varphi_{80}$ |
|       | 37              | 0      | $309429120_1 = \chi_{88}, \varphi_{81}$ |
|       | 38              | 0      | $360062976_1 = \chi_{90}, \varphi_{82}$ |
|       | 39              | 0      | $402902500_1 = \chi_{92}, \varphi_{83}$ |
|       | 40              | 0      | $469945476_1 = \chi_{94}, \varphi_{84}$ |

|       | blocks               | defect | matrix                                     |
|-------|----------------------|--------|--------------------------------------------|
|       | 41                   | 0      | $469945476_2 = \chi_{95}, \varphi_{85}$    |
|       | 42                   | 0      | $483483000_1 = \chi_{96}, \varphi_{87}$    |
|       | 43                   | 0      | $502078500_1 = \chi_{97}, \varphi_{88}$    |
|       | 44                   | 0      | $522161640_1 = \chi_{100}, \varphi_{89}$   |
|       | 45                   | 0      | $551675124_1 = \chi_{101}, \varphi_{90}$   |
| 2.G : | 46                   | 2      | $27 \times 21$                             |
|       | 47                   | 1      | $7 \times 6$                               |
|       | 48                   | 1      | $5 \times 3$                               |
|       | 49                   | 0      | $351624_1 = \chi_{111}, \varphi_{100}$     |
|       | 50                   | 0      | $388080_1 = \chi_{112}, \varphi_{101}$     |
|       | 51                   | 0      | $6446440_1 = \chi_{118}, \varphi_{107}$    |
|       | 52                   | 0      | $6446440_2 = \chi_{119}, \varphi_{108}$    |
|       | 53                   | 0      | $15002624_1 = \chi_{125}, \varphi_{115}$   |
|       | $54 = \overline{53}$ | 0      | $15002624_2 = \chi_{126}, \varphi_{116}$   |
|       | 55                   | 0      | $15471456_1 = \chi_{127}, \varphi_{117}$   |
|       | 56                   | 0      | $16170000_1 = \chi_{128}, \varphi_{118}$   |
|       | $57 = \overline{56}$ | 0      | $16170000_2 = \chi_{129}, \varphi_{119}$   |
|       | 58                   | 0      | $17310720_1 = \chi_{131}, \varphi_{120}$   |
|       | 59                   | 0      | $18987696_1 = \chi_{132}, \varphi_{121}$   |
|       | 60                   | 0      | $51571520_2 = \chi_{140}, \varphi_{126}$   |
|       | 61                   | 0      | $59153976_1 = \chi_{141}, \varphi_{128}$   |
|       | 62                   | 0      | $59153976_2 = \chi_{142}, \varphi_{129}$   |
|       | $63 = \overline{62}$ | 0      | $59153976_3 = \chi_{143}, \varphi_{130}$   |
|       | 64                   | 0      | $112519680_1 = \chi_{147}, \varphi_{132}$  |
|       | 65                   | 0      | $139243104_1 = \chi_{148}, \varphi_{133}$  |
|       | 66                   | 0      | $161161000_1 = \chi_{149}, \varphi_{134}$  |
|       | 67                   | 0      | $190417920_1 = \chi_{150}, \varphi_{136}$  |
|       | 68                   | 0      | $247543296_1 = \chi_{154}, \varphi_{140}$  |
|       | 69                   | 0      | $287006720_1 = \chi_{156}, \varphi_{141}$  |
|       | 70                   | 0      | $342752256_1 = \chi_{158}, \varphi_{142}$  |
|       | 71                   | 0      | $351624000_1 = \chi_{159}, \varphi_{143}$  |
|       | 72                   | 0      | $464143680_1 = \chi_{161}, \varphi_{144}$  |
|       | 73                   | 0      | $557865000_1 = \chi_{164}, \varphi_{145}$  |
|       | 74                   | 0      | $805805000_1 = \chi_{166}, \varphi_{146}$  |
|       | 75                   | 0      | $1021620600_1 = \chi_{167}, \varphi_{147}$ |

[illegible]

| (Block 1:)                | $\varphi_{40}$ | $\varphi_{43}$ | $\varphi_{49}$ | $\varphi_{53}$ | $\varphi_{57}$ | $\varphi_{61}$ | $\varphi_{64}$ | $\varphi_{66}$ |                              |
|---------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------------|
| $1_1 = \chi_1$            | .              | .              | .              | .              | .              | .              | .              | .              |                              |
| $276_1 = \chi_2$          | .              | .              | .              | .              | .              | .              | .              | .              |                              |
| $299_1 = \chi_3$          | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_1 = 1_1$            |
| $17250_1 = \chi_6$        | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_2 = 276_1$          |
| $80730_1 = \chi_{10}$     | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_3 = 299_1$          |
| $94875_1 = \chi_{11}$     | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_6 = 16951_1$        |
| $822250_1 = \chi_{19}$    | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_{10} = 80729_1$     |
| $871884_1 = \chi_{20}$    | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_{11} = 94599_1$     |
| $1821600_1 = \chi_{24}$   | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_{19} = 821951_1$    |
| $2055625_1 = \chi_{25}$   | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_{20} = 871883_1$    |
| $9221850_1 = \chi_{35}$   | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_{24} = 1821324_1$   |
| $16347825_1 = \chi_{38}$  | 1              | .              | .              | .              | .              | .              | .              | .              | $\varphi_{25} = 2038674_1$   |
| $21528000_1 = \chi_{41}$  | .              | 1              | .              | .              | .              | .              | .              | .              | $\varphi_{35} = 8305300_1$   |
| $21579129_1 = \chi_{42}$  | .              | .              | .              | .              | .              | .              | .              | .              | $\varphi_{37} = 10140998_1$  |
| $24667500_1 = \chi_{45}$  | 1              | .              | .              | .              | .              | .              | .              | .              | $\varphi_{38} = 11438131_1$  |
| $31574400_1 = \chi_{48}$  | .              | 1              | .              | .              | .              | .              | .              | .              | $\varphi_{40} = 14445772_1$  |
| $57544344_1 = \chi_{55}$  | .              | .              | .              | 1              | .              | .              | .              | .              | $\varphi_{43} = 20561518_1$  |
| $66602250_1 = \chi_{58}$  | .              | .              | .              | .              | 1              | .              | .              | .              | $\varphi_{49} = 34778162_1$  |
| $85250880_1 = \chi_{61}$  | .              | .              | 1              | 1              | .              | .              | .              | .              | $\varphi_{53} = 48416794_1$  |
| $150732800_1 = \chi_{66}$ | .              | .              | .              | 1              | .              | 1              | .              | .              | $\varphi_{57} = 64763975_1$  |
| $163478250_1 = \chi_{67}$ | .              | 1              | .              | .              | .              | .              | .              | 1              | $\varphi_{61} = 100277332_1$ |
| $191102976_1 = \chi_{71}$ | 1              | 1              | .              | .              | .              | .              | .              | 1              | $\varphi_{64} = 107932537_1$ |
| $207491625_1 = \chi_{74}$ | .              | .              | 1              | .              | 1              | .              | 1              | .              | $\varphi_{66} = 134516557_1$ |
| $215547904_1 = \chi_{76}$ | 1              | .              | .              | .              | 1              | .              | .              | 1              |                              |
| $219648000_1 = \chi_{77}$ | .              | .              | .              | .              | .              | 1              | 1              | .              |                              |
| $299710125_1 = \chi_{86}$ | .              | .              | 1              | 1              | .              | 1              | 1              | .              |                              |
| $326956500_1 = \chi_{89}$ | .              | .              | .              | .              | 1              | .              | 1              | 1              |                              |

| Block 2:                  | $\varphi_4$ | $\varphi_{12}$ | $\varphi_{39}$ | $\varphi_{59}$ | $\varphi_{67}$ | $\varphi_{73}$ |                              |
|---------------------------|-------------|----------------|----------------|----------------|----------------|----------------|------------------------------|
| $1771_1 = \chi_4$         | 1           | .              | .              | .              | .              | .              | $\varphi_4 = 1771_1$         |
| $313950_1 = \chi_{12}$    | .           | 1              | .              | .              | .              | .              | $\varphi_{12} = 313950_1$    |
| $12432420_1 = \chi_{37}$  | .           | 1              | 1              | .              | .              | .              | $\varphi_{39} = 12118470_1$  |
| $77702625_1 = \chi_{59}$  | 1           | .              | .              | 1              | .              | .              | $\varphi_{59} = 77700854_1$  |
| $184184000_1 = \chi_{68}$ | .           | .              | 1              | .              | 1              | .              | $\varphi_{67} = 172065530_1$ |
| $292953024_1 = \chi_{85}$ | .           | .              | .              | 1              | .              | 1              | $\varphi_{73} = 215252170_1$ |
| $387317700_1 = \chi_{91}$ | .           | .              | .              | .              | 1              | 1              |                              |

| <b>Block 3:</b>           | $\varphi_5$ | $\varphi_{22}$ | $\varphi_{41}$ | $\varphi_{47}$ | $\varphi_{48}$ | $\varphi_{86}$ |
|---------------------------|-------------|----------------|----------------|----------------|----------------|----------------|
| $8855_1 = \chi_5$         | 1           | .              | .              | .              | .              | .              |
| $1434510_1 = \chi_{21}$   | .           | 1              | .              | .              | .              | .              |
| $21049875_1 = \chi_{40}$  | .           | 1              | 1              | .              | .              | .              |
| $25900875_1 = \chi_{47}$  | 1           | .              | .              | 1              | .              | .              |
| $46621575_1 = \chi_{52}$  | .           | .              | 1              | .              | 1              | .              |
| $503513010_1 = \chi_{98}$ | .           | .              | .              | 1              | .              | 1              |
| $504627200_1 = \chi_{99}$ | .           | .              | .              | .              | 1              | 1              |

|                |   |               |
|----------------|---|---------------|
| $\varphi_5$    | = | $8855_1$      |
| $\varphi_{22}$ | = | $1434510_1$   |
| $\varphi_{41}$ | = | $19615365_1$  |
| $\varphi_{47}$ | = | $25892020_1$  |
| $\varphi_{48}$ | = | $27006210_1$  |
| $\varphi_{86}$ | = | $477620990_1$ |

| <b>Block 4:</b>          | $\varphi_7$ | $\varphi_{15}$ | $\varphi_{21}$ | $\varphi_{29}$ | $\varphi_{50}$ | $\varphi_{55}$ |
|--------------------------|-------------|----------------|----------------|----------------|----------------|----------------|
| $27300_1 = \chi_7$       | 1           | .              | .              | .              | .              | .              |
| $483000_1 = \chi_{15}$   | .           | 1              | .              | .              | .              | .              |
| $1771000_1 = \chi_{23}$  | .           | 1              | 1              | .              | .              | .              |
| $2816856_1 = \chi_{29}$  | 1           | .              | .              | 1              | .              | .              |
| $40370176_1 = \chi_{50}$ | .           | .              | 1              | .              | 1              | .              |
| $55255200_1 = \chi_{54}$ | .           | .              | .              | 1              | .              | 1              |
| $91547820_1 = \chi_{62}$ | .           | .              | .              | .              | 1              | 1              |

|                |   |              |
|----------------|---|--------------|
| $\varphi_7$    | = | $27300_1$    |
| $\varphi_{15}$ | = | $483000_1$   |
| $\varphi_{21}$ | = | $1288000_1$  |
| $\varphi_{29}$ | = | $2789556_1$  |
| $\varphi_{50}$ | = | $39082176_1$ |
| $\varphi_{55}$ | = | $52465644_1$ |

| <b>Block 5:</b>           | $\varphi_8$ | $\varphi_{13}$ | $\varphi_{30}$ | $\varphi_{52}$ | $\varphi_{71}$ | $\varphi_{76}$ |
|---------------------------|-------------|----------------|----------------|----------------|----------------|----------------|
| $37674_1 = \chi_8$        | 1           | .              | .              | .              | .              | .              |
| $345345_1 = \chi_{13}$    | .           | 1              | .              | .              | .              | .              |
| $2877875_1 = \chi_{30}$   | 1           | .              | 1              | .              | .              | .              |
| $44013375_1 = \chi_{51}$  | .           | 1              | .              | 1              | .              | .              |
| $251756505_1 = \chi_{80}$ | .           | .              | .              | 1              | 1              | .              |
| $259008750_1 = \chi_{82}$ | .           | .              | 1              | .              | .              | 1              |
| $464257024_1 = \chi_{93}$ | .           | .              | .              | .              | 1              | 1              |

|                |   |               |
|----------------|---|---------------|
| $\varphi_8$    | = | $37674_1$     |
| $\varphi_{13}$ | = | $345345_1$    |
| $\varphi_{30}$ | = | $2840201_1$   |
| $\varphi_{52}$ | = | $43668030_1$  |
| $\varphi_{71}$ | = | $208088475_1$ |
| $\varphi_{76}$ | = | $256168549_1$ |

| <b>Block 6:</b>           | $\varphi_9$ | $\varphi_{14}$ | $\varphi_{31}$ | $\varphi_{32}$ | $\varphi_{60}$ | $\varphi_{63}$ |
|---------------------------|-------------|----------------|----------------|----------------|----------------|----------------|
| $44275_1 = \chi_9$        | 1           | .              | .              | .              | .              | .              |
| $376740_1 = \chi_{14}$    | .           | 1              | .              | .              | .              | .              |
| $4100096_1 = \chi_{31}$   | 1           | .              | .              | 1              | .              | .              |
| $7628985_1 = \chi_{34}$   | .           | .              | 1              | 1              | .              | .              |
| $83720000_1 = \chi_{60}$  | .           | 1              | .              | .              | 1              | .              |
| $106142400_1 = \chi_{64}$ | .           | .              | 1              | .              | .              | 1              |
| $185912496_1 = \chi_{69}$ | .           | .              | .              | .              | 1              | 1              |

|                |   |               |
|----------------|---|---------------|
| $\varphi_9$    | = | $44275_1$     |
| $\varphi_{14}$ | = | $376740_1$    |
| $\varphi_{31}$ | = | $3573164_1$   |
| $\varphi_{32}$ | = | $4055821_1$   |
| $\varphi_{60}$ | = | $83343260_1$  |
| $\varphi_{63}$ | = | $102569236_1$ |

[illegible]

| (Block 46:)                | $\varphi_{111}$ | $\varphi_{112}$ | $\varphi_{114}$ | $\varphi_{122}$ | $\varphi_{124}$ | $\varphi_{125}$ | $\varphi_{137}$ | $\varphi_{138}$ | $\varphi_{139}$ |
|----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| $24_1 = \chi_{102}$        | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $2024_1 = \chi_{103}$      | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $4576_1 = \chi_{105}$      | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $40480_1 = \chi_{106}$     | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $95680_1 = \chi_{107}$     | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $299000_1 = \chi_{109}$    | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $315744_1 = \chi_{110}$    | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $789360_1 = \chi_{113}$    | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $1937520_1 = \chi_{115}$   | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $5051904_1 = \chi_{117}$   | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $7104240_1 = \chi_{120}$   | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $9152000_1 = \chi_{121}$   | .               | .               | .               | .               | .               | .               | .               | .               | .               |
| $9152000_2 = \chi_{122}$   | 1               | .               | .               | .               | .               | .               | .               | .               | .               |
| $13156000_1 = \chi_{124}$  | .               | 1               | .               | .               | .               | .               | .               | .               | .               |
| $17050176_1 = \chi_{130}$  | .               | 1               | .               | .               | .               | .               | .               | .               | .               |
| $19734000_1 = \chi_{133}$  | .               | .               | 1               | .               | .               | .               | .               | .               | .               |
| $34155000_1 = \chi_{134}$  | .               | .               | .               | 1               | .               | .               | .               | .               | .               |
| $49335000_1 = \chi_{138}$  | .               | .               | .               | .               | 1               | .               | .               | .               | .               |
| $50519040_1 = \chi_{139}$  | .               | .               | .               | .               | .               | 1               | .               | .               | .               |
| $67358720_1 = \chi_{145}$  | 1               | .               | 1               | 1               | .               | .               | .               | .               | .               |
| $210496000_1 = \chi_{151}$ | .               | 1               | .               | .               | .               | .               | 1               | .               | .               |
| $215547904_2 = \chi_{152}$ | .               | 1               | .               | .               | .               | .               | .               | 1               | .               |
| $313524224_1 = \chi_{157}$ | 1               | .               | 1               | 1               | .               | .               | .               | .               | 1               |
| $394680000_1 = \chi_{160}$ | 1               | .               | .               | 1               | 1               | 1               | .               | .               | 1               |
| $485760000_1 = \chi_{162}$ | .               | .               | .               | .               | 1               | .               | 1               | .               | 1               |
| $517899096_1 = \chi_{163}$ | 1               | .               | .               | .               | .               | 1               | .               | 1               | 1               |
| $655360000_1 = \chi_{165}$ | .               | 1               | .               | .               | .               | .               | 1               | 1               | 1               |

|                             |                               |
|-----------------------------|-------------------------------|
| $\varphi_{91} = 24_1$       | $\varphi_{110} = 9152000_1$   |
| $\varphi_{92} = 2024_1$     | $\varphi_{111} = 9152000_2$   |
| $\varphi_{94} = 4576_1$     | $\varphi_{112} = 10039568_1$  |
| $\varphi_{95} = 38456_1$    | $\varphi_{114} = 14720528_1$  |
| $\varphi_{96} = 95656_1$    | $\varphi_{122} = 33544832_1$  |
| $\varphi_{98} = 294424_1$   | $\varphi_{124} = 48928176_1$  |
| $\varphi_{99} = 311168_1$   | $\varphi_{125} = 50207872_1$  |
| $\varphi_{102} = 494936_1$  | $\varphi_{137} = 193352192_1$ |
| $\varphi_{104} = 1937496_1$ | $\varphi_{138} = 205508336_1$ |
| $\varphi_{105} = 3075952_1$ | $\varphi_{139} = 243383952_1$ |
| $\varphi_{109} = 7008584_1$ |                               |

| <b>Block 47:</b>           | $\varphi_{93}$ | $\varphi_{103}$ | $\varphi_{113}$ | $\varphi_{127}$ | $\varphi_{131}$ | $\varphi_{135}$ |                               |
|----------------------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------------------|
| $2576_1 = \chi_{104}$      | 1              | .               | .               | .               | .               | .               | $\varphi_{93} = 2576_1$       |
| $1841840_1 = \chi_{114}$   | .              | 1               | .               | .               | .               | .               | $\varphi_{103} = 1841840_1$   |
| $11051040_1 = \chi_{123}$  | 1              | .               | 1               | .               | .               | .               | $\varphi_{113} = 11048464_1$  |
| $62790000_1 = \chi_{144}$  | .              | .               | 1               | 1               | .               | .               | $\varphi_{127} = 51741536_1$  |
| $106260000_1 = \chi_{146}$ | .              | 1               | .               | .               | 1               | .               | $\varphi_{131} = 104418160_1$ |
| $230230000_1 = \chi_{153}$ | .              | .               | .               | 1               | .               | 1               | $\varphi_{135} = 178488464_1$ |
| $282906624_1 = \chi_{155}$ | .              | .               | .               | .               | 1               | 1               |                               |

| <b>Block 48:</b>          | $\varphi_{97}$ | $\varphi_{106}$ | $\varphi_{123}$ |                              |
|---------------------------|----------------|-----------------|-----------------|------------------------------|
| $170016_1 = \chi_{108}$   | 1              | .               | .               | $\varphi_{97} = 170016_1$    |
| $4004000_1 = \chi_{116}$  | 1              | 1               | .               | $\varphi_{106} = 3833984_1$  |
| $40370176_2 = \chi_{135}$ | .              | .               | 1               | $\varphi_{123} = 40370176_1$ |
| $40370176_3 = \chi_{136}$ | .              | .               | 1               |                              |
| $44204160_1 = \chi_{137}$ | .              | 1               | 1               |                              |