Errata

The AWC-goodness and essential rank of sporadic simple groups

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1. Introduction

We correct a few typos and errors in the tables of our paper

[⋆] J. An & H. Dietrich.
The AWC-goodness and essential rank of sporadic simple groups.
Journal of Algebra **356**, 325 – 354 (2012).

The notation and all labels (of references, tables, theorems, etc.) in this errata are as in [⋆]. We use the following convention: All changes to results given in [⋆] are written in a different color. If only the layout and typesetting is concerned, then we use green. If an entry in a table has changed although the original entry is correct, then we use blue; this usually happens if we give more details on the structure of a group, for example, if we replace $G.H$ by $G \times H$ because the extension is known to be a direct product. If a typo or error is corrected, then we use red.

We would like to thank **Jürgen Müller** and **Thomas Breuer** for the thorough reading of our paper [⋆]; most corrections in this errata are due to the helpful comments and computations of Thomas Breuer.

2. Corrections

The corrections made in Tables 2 – 27 require an adjustment of Theorem 1.2 in [⋆]; the corrections do not affect the other results in [⋆].

Theorem 1.2. *Let G be a sporadic simple group and let p be a prime. We have* $\mathrm{rk}_e(G,p) = 0$ *with the following exceptions; we write* $\mathrm{rk}_e(G,p_1,\ldots,p_r) = e_1,\ldots,e_r$ *if* $\mathrm{rk}_e(G,p_i) = e_i$ *for all* $i \in \{1,\ldots,r\}$.

$\mathrm{rk}_e(\mathrm{B},2,3,5)$	=	$5,4,2,$	$\mathrm{rk}_e(\mathrm{Co}_1,2,3,5)$	=	$5,4,3,$	$\mathrm{rk}_e(\mathrm{Co}_2,2,3)$	=	$4,2,$
$\mathrm{rk}_e(\mathrm{Co}_3,2,3)$	=	$4,2,$	$\mathrm{rk}_e(\mathrm{Fi}_{22},2,3)$	=	$4,4,$	$\mathrm{rk}_e(\mathrm{Fi}_{23},2,3)$	=	$4,3,$
$\mathrm{rk}_e(\mathrm{Fi}'_{24},2,3,7)$	=	$5,3,2,$	$\mathrm{rk}_e(\mathrm{He},2,3,7)$	=	$4,1,1,$	$\mathrm{rk}_e(\mathrm{HN},2,3,5)$	=	$4,2,2,$
$\mathrm{rk}_e(\mathrm{HS},2)$	=	$3,$	$\mathrm{rk}_e(\mathrm{J}_2,2)$	=	$2,$	$\mathrm{rk}_e(\mathrm{J}_3,2)$	=	$3,$
$\mathrm{rk}_e(\mathrm{J}_4,2,3)$	=	$5,1,$	$\mathrm{rk}_e(\mathrm{Ly},2,3,5)$	=	$5,2,2,$	$\mathrm{rk}_e(\mathrm{M},2,3,5,7,13)$	=	$6,4,3,3,1,$
$\mathrm{rk}_e(\mathrm{M}_{11},2)$	=	$2,$	$\mathrm{rk}_e(\mathrm{M}_{12},2,3)$	=	$2,2,$	$\mathrm{rk}_e(\mathrm{M}_{22},2)$	=	$3,$
$\mathrm{rk}_e(\mathrm{M}_{23},2)$	=	$3,$	$\mathrm{rk}_e(\mathrm{M}_{24},2,3)$	=	$4,1,$	$\mathrm{rk}_e(\mathrm{McL},2,3)$	=	$3,2,$
$\mathrm{rk}_e(\mathrm{O'N},2,7)$	=	$3,2,$	$\mathrm{rk}_e(\mathrm{Ru},2,3,5)$	=	$3,1,1,$	$\mathrm{rk}_e(\mathrm{Suz},2,3)$	=	$3,1,$
$\mathrm{rk}_e(\mathrm{Th},2,3,5)$	=	$5,3,1.$						

Table 2: Radical subgroups of $G = \mathrm{B}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_2
1	G	G	0	
2	$2.{}^2E_6(2)$	${}^2E_6(2).2$	0	
$(2^2)_a$	$(2^2)_a \times F_4(2)$	$F_4(2).2$	0	
$(2^2)_b$	$(2^2)_b \times {}^2F_4(2)$	$S_3 \times {}^2F_4(2)$	1	
D_8	$2 \times {}^2F_4(2)$	${}^2F_4(2)$	1	
2_+^{1+22}	2	Co_2	1	
$2^9.2^{16}$	2^9	$\mathrm{S}_8(2)$	1	
$2^5(2^{5+10} \times 2^{10})$	2^5	$\mathrm{L}_5(2)$	1	
$2^9.2^{16}.2^7$	2	$S_6(2)$	1	
$2^{2+10+20}$	2^2	$S_3 \times \mathrm{M}_{22}{:}2$	0	
$2^{1+22}.2^{10}$	2	$\mathrm{M}_{22}{:}2$	0	
$2^{1+22}.(2_+^{1+6} \times 2^4)$	2	$\mathrm{L}_4(2)$	1	
$2^{3+5+12+15}$	2^3	$\mathrm{L}_3(2) \times S_5$	0	
$2^9.2^{16}.2^{10}$	2^4	$\mathrm{L}_4(2)$	1	
$2^9.2^{16}.2^{3+8}$	2^2	$S_6 \times S_3$	1	
$2^{2+10+20}.2^4$	2^2	$S_3 \times \mathrm{L}_3(2)$	1	
$2^5.(2^{5+10} \times 2^{10}).2^6$	2^3	$\mathrm{L}_3(2) \times S_3$	1	
$2^{2+10+20}.2^5$	2^2	$S_3 \times S_5$	0	
$2^9.2^{16}.2^7.2^5$	2	$S_4(2)$	1	
$2^{3+5+12+15}.2^2$	2	$S_3 \times S_5$	0	
$2_+^{1+22}.2^{10}.2^4$	2	$\mathrm{L}_3(2)$	1	
$2^9.2^{16}.2^{6+6}$	2^3	$\mathrm{L}_3(2) \times S_3$	1	
$2^9.2^{16}.2^{10}.2^3$	2	$\mathrm{L}_3(2)$	1	
$2_+^{1+22}.2^{4+10}.2$	2	S_3^2	1	
$2_+^{1+22}.2^{10}.2^5$	2	S_5	0	
$2^9.2^{16}.2^{6+6}.2$	2^3	$\mathrm{L}_3(2)$	1	
$2^{2+10+20}.2^5.2$	2^2	S_3^2	1	
$2^9.2^{16}.2^{6+6}.2^2$	2	S_3^2	1	
$\mathbf{2_+^{1+22}.2^{10}.2^3.2^3}$	2	S_3	1	
$2^9.2^{16}.2^{10}.2^4$	2^2	S_3^2	1	
$2^9.2^{16}.2^{3+8}.2^3$	2^2	S_3^2	1	
$\mathbf{2^9.2^{16}.2^{6+6}.2^2.2}$	2	S_3	1	
$\mathbf{2^9.2^{16}.2^{3+8}.2^4}$	2	S_3	1	
$\mathbf{2_+^{1+22}.2^{1+8}.2^3.2^5}$	2	S_3	1	
$\mathbf{2^{1+10+20}.2^4.2^3.2}$	2^2	S_3	1	
D	2	1	1	
1	G	G	9	14
3	$3 \times \mathrm{Fi}_{22}{:}2$	$2 \times (\mathrm{Fi}_{22}{:}2)$	4	0
3^2	$3^2 \times \mathrm{U}_4(3){:}2^2$	$(D_8 \times \mathrm{U}_4(3){:}2^2).2$	19	0
3^6	3^6	$(2 \times (\mathrm{L}_4(3).2)).2$	5	2
3_+^{1+8}	3	$2_-^{1+6}.\mathrm{U}_4(3).2$	11	1
$3^3.3^6$	3^3	$\mathrm{L}_3(3) \times D_8$	5	2
$3_+^{1+8}.3$	3	$2^2.2^4.3^2.D_8$	10	4
$3^3.3.3^3.3^3$	3^3	$2 \times \mathrm{L}_3(3)$	2	2
$\mathbf{3_+^{1+8}.3^2}$	3	$2.S_4 \times D_8$	10	4
$3^2.3^3.3^6$	3^2	$S_4 \times 2.S_4$	4	0
$\mathbf{3_+^{1+8}.3^3}$	3	$2^4.S_3$	8	0
$\mathbf{3_+^{1+8}.3_+^{1+2}}$	3	$2 \times 2.S_4$	4	4
$\mathbf{3^2.3^3.3^6.3}$	3^2	$2 \times 2.S_4$	4	4
$3_+^{1+8}.3_+^{1+2}.3$	3	2^3	8	8
1	G	G	45	55
5	$5 \times \mathrm{HS}{:}2$	$4 \times (\mathrm{HS}{:}2)$	16	8
5^2	$5^2 \times S_5$	$4.S_4 \times S_5$	32	0
5^3	5^3	$\mathrm{L}_3(5)$	1	1
$\mathbf{5^2.5_+^{1+2}}$	5^2	$\mathrm{GL}_2(5)$	30	4
$\mathbf{5_+^{1+4}}$	5	$2_-^{1+4}.A_5.4$	4	12
$5_+^{1+4}.5$	5	4^2	16	16
1	G	G	63	87
7	$7 \times 2.\mathrm{L}_3(4){:}2$	$(3 \times 2.\mathrm{L}_3(4).2){:}2$	30	9
7^2	$7^2 \times 2^2$	$(2^2 \times 3 \times 2A_4)){:}2$	24	24

Comment: The only changes in the red parts are that 2^{9+16} and $2_+^{1+10+20}$ have been replaced by $2^9.2^{16}$ and $2^{1+10+20}$, respectively.

Table 3: Radical subgroups of $G = \mathrm{Co}_1$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	0
$(2^2)_a$	$(2^2)_a \times G_2(4)$	$(3 \times G_2(4)){:}2$	1
$(2^2)_b$	$(2^2)_b \times G_2(2)$	$S_3 \times G_2(2)$	1
D_8	$2 \times G_2(2)$	$G_2(2)$	1
2^{1+8}_+	2	$O_8^+(2)$	1
2^{11}	2^{11}	M_{24}	0
2^{2+12}	2^2	$A_8 \times S_3$	1
$2^{2+12}.2$	2	A_8	1
$2^{1+8}_+.2^6$	2	A_8	1
$2^{11}.2^4$	2	A_8	1
2^{4+12}	2^4	$S_3 \times 3.S_6$	1
$2^{11}.2^6$	2^2	$\mathrm{L}_3(2) \times S_3$	1
$2^{4+12}.2$	2^4	$3.S_6$	1
$2^{2+12}.2^3$	2^2	$\mathrm{L}_3(2) \times S_3$	1
$2^{1+8}_+.2^6.2^3$	2	$\mathrm{L}_3(2)$	1
$2^{11}.2^3.2^4$	2	$\mathrm{L}_3(2)$	1
$2^{11}.2^{1+6}_+$	2	$\mathrm{L}_3(2)$	1
$2^{1+8}_+.2^{1+8}_+$	2	S_3^3	1
$2^{2+12}.2^4$	2^2	S_3^3	1
$2^{2+12}.2^5$	2	S_3^2	1
$2^{1+8}_+.2^6.2^4$	2	S_3^2	1
$2^{1+8}_+.2^{1+8}_+.2$	2	S_3^2	1
$2^{11}.2^4.2^4$	2^2	S_3^2	1
$2^{11}.2^2.2^6$	2^2	S_3^2	1
$2^{2+12}.2^3.2^2$	2^2	S_3^2	1
$\mathbf{2^{1+8}_+.2^6.2^3.2^2}$	2	S_3	1
$\mathbf{2^{2+12}.2^3.2^2.2}$	2	S_3	1
$\mathbf{2^{11}.2.2^3.2^5}$	2	S_3	1
$\mathbf{2^{1+8}_+.2^6.2^4.2}$	2	S_3	1
$\mathbf{2^{11}.2^2.2^3.2^4}$	2^2	S_3	1
D	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_2
1	G	G	1	1
$(3)_a$	$(3)_a.\mathrm{Suz}$	$\mathrm{Suz}{:}2$	0	1
$(3)_b$	$(3)_b \times A_9$	$2 \times A_9$	2	0
3^2	$3^2.\mathrm{U}_4(3)$	$\mathrm{U}_4(2).D_8$	5	0
3^{1+2}_+	$3 \times A_6$	$(8 \times A_6).2$	7	0
3^{1+4}_+	3	$2.\mathrm{U}_4(2){:}2$	2	2
3^6	3^6	$2.\mathrm{M}_{12}$	1	1
$3^6.3$	3^2	$2.(A_4 \times 2)$	2	2
3^{3+4}	3^3	$2.S_4^2$	4	0
$\mathbf{3^{1+4}_+.3^3}$	3	$2.(S_4 \times 2)$	4	4
$\mathbf{3^6.3^2}$	3^3	$2.\mathrm{GL}_2(3)$	4	4
$\mathbf{3^{3+4}.3}$	3	$2.(2 \times S_4)$	4	4
D	3	2^3	8	8
1	G	G	15	12
$(5)_a$	$(5)_a \times A_5^2.2$	$(2 \times A_5^2.2).2$	8	0
$(5)_b$	$(5)_b \times \mathrm{J}_2$	$(2 \times \mathrm{J}_2){:}2$	12	6
$\mathbf{(5^2)_a}$	$(5^2)_a \times A_5$	$A_5.4.S_3$	12	0
$\mathbf{(5^2)_b}$	$(5^2)_b$	$2.A_5$	1	1
$\mathbf{5^3}$	5^3	$(4 \times A_5).2$	8	8
$\mathbf{5^{1+2}_+}$	5	$\mathrm{GL}_2(5)$	4	4
D	5	4^2	16	16
1	G	G	39	27
$(7)_a$	$(7)_a \times A_7$	$(3 \times A_7).2$	24	3
$(7)_b$	$(7)_b \times \mathrm{L}_2(7)$	$(3 \times \mathrm{L}_2(7)).2$	6	6
7^2	7^2	$3 \times 2.A_4$	21	21

Table 4: Radical subgroups of $G = \mathrm{Co}_2$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	1
2^{1+8}_+	2	$\mathrm{S}_6(2)$	1
2^{10}	2^{10}	$\mathrm{M}_{22}{:}2$	0
$2^{1+6}_+ \times 2^4$	2^5	A_8	1
$2^{1+8}_+.2^5$	2	$\mathrm{S}_4(2)$	1
2^{4+10}	2^4	$S_5 \times S_3$	0
$2^{10}.2^4$	2^4	$\mathrm{L}_3(2)$	1
$2^{1+8}_+.2^6$	2	$\mathrm{L}_3(2)$	1
$2^{4+10}.2$	2^3	S_3^2	1
$2^{10}.2^5$	2^4	S_5	0
$2^{1+8}_+.2^3.2^4$	2	S_3^2	1
$\mathbf{2^{10}.2^3.2^3}$	2^3	S_3	1
$\mathbf{2^{1+8}_+.2^2.2^2.2^4}$	2	S_3	1
$\mathbf{2^{1+8}_+.2^3.2^2.2^3}$	2	S_3	1
$\mathbf{2^{1+8}_+.2^3.2^5}$	2	S_3	1
D	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	7
3	$3 \times \mathrm{U}_4(2).2$	$2 \times \mathrm{U}_4(2).2$	4
$\mathbf{3^4}$	3^4	$A_6.D_8$	5
$\mathbf{3^{1+4}_+}$	3	$2^{1+4}_-.S_5$	4
D	3	$SD_{2^4} \times 2$	14
1	G	G	23
5	$5 \times S_5$	$4 \times S_5$	8
5^{1+2}_+	5	$4.S_4$	16

Table 5: Radical subgroups of $G = \mathrm{Co}_3$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	0
$(2)_a$	$(2)_a.\mathrm{S}_6(2)$	$\mathrm{S}_6(2)$	1
$(2)_b$	$(2)_b \times \mathrm{M}_{12}$	M_{12}	0
2^2	$2^2 \times S_5$	$3 \times S_5$	0
2^3	$2^3 \times S_3$	$S_3 \times (7{:}3)$	5
2^4	2^4	A_8	1
4.2^4	4	S_6	1
2_+^{1+6}	2	$\mathrm{L}_3(2)$	1
$2^3.2^4$	2^3	$\mathrm{L}_3(2)$	1
$2^2.2^6$	2^2	$(3^2{:}2).S_3$	1
$\mathbf{(2.2^3.2^5)_a}$	2	S_3	1
$\mathbf{(2.2^3.2^5)_b}$	2	S_3	1
$\mathbf{2.2^4.2^4}$	2	S_3	1
$\mathbf{2^2.2^3.2^4}$	2^2	S_3	1
D	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	0
3	$3 \times \mathrm{L}_2(8){:}3$	$2 \times \mathrm{L}_2(8){:}3$	2
$\mathbf{3_+^{1+4}}$	3	$4.S_6$	4
$\mathbf{3^5}$	3^5	$2 \times \mathrm{M}_{11}$	2
D	3	$2 \times SD_{24}$	14
1	G	G	11
5	$5 \times A_5$	$A_5 \times 4$	4
5_+^{1+2}	5	$(3 \times 8).2$	18

Table 6: Radical subgroups of $G = \mathrm{Fi}_{22}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_3
1	G	G	1/0	0
2	$2.\mathrm{U}_6(2)$	$\mathrm{U}_6(2)$	1/0	0
2^6	2^6	$\mathrm{S}_6(2)$	1/0	1
2^{10}	2^{10}	M_{22}	0/0	1
$2 \times 2_+^{1+8}$	2^2	$\mathrm{U}_4(2){:}2$	0/0	0
$2^6.2^5$	2	S_6	1/0	1
$2^{10}.2^3$	2^3	$\mathrm{L}_3(2)$	1/0	1
2^{5+8}	2^5	$S_3 \times A_6$	0/2	0
$2^{5+8}.2$	2^5	A_6	0/2	0
$2^{10}.2^4$	2^2	S_5	0/0	0
$2^{5+8}.2^2$	2^2	S_3^2	1/0	1
$(2 \times 2_+^{1+8}).2.2^4$	2^2	S_3^2	1/0	1
$\mathbf{2^{10}.2^2.2^3}$	2	S_3	1/0	1
$\mathbf{2^{10}.2^2.2^4}$	2^2	S_3	1/0	1
$\mathbf{2^{5+8}.D_8}$	2	S_3	1/0	1
$\mathbf{2^{5+8}.2^3}$	2^2	S_3	1/0	1
$2^{5+8}.D_8.2$	2	1	1/0	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_2	λ_3	λ_6
1	G	G	1/0	0/0		
3	$3 \times \mathrm{U}_4(3){:}2$	$2 \times \mathrm{U}_4(3){:}2$	4/0	0/0		
3^5	3^5	$\mathrm{U}_4(2){:}2$	2/0	0/2		
$(3^{3+3})_a$	3^3	$\mathrm{L}_3(3)$	1	1		
$(3^{3+3})_b$	3^3	$\mathrm{L}_3(3)$	1	1		
3_+^{1+6}	3	$2^{3+4}{:}3^2{:}2$	2/2	0/0		
$\mathbf{3^5.3^3}$	3	$2 \times S_4$	4/0	0/4		
$\mathbf{(3_+^{1+6}.3)_a}$	3	$2.S_4$	2	2		
$\mathbf{(3_+^{1+6}.3)_b}$	3	$2.S_4$	2	2		
$\mathbf{3^5{:}3_+^{1+2}}$	3^2	$2.S_4$	2/0	0/2		
D	3	2^2	4/0	0/4		
1	G	G	23/12	5/14	20	4
5	$5 \times S_5$	$4 \times S_5$	8/0	0/8	8	8
5^2	5^2	$4.S_4$	16/0	4/12	16	16

Table 7: Radical subgroups of $G = \mathrm{Fi}_{23}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	2
2	$2.\mathrm{Fi}_{22}$	Fi_{22}	1
$(2^2)_a$	$(2^2)_a.\mathrm{U}_6(2)$	$\mathrm{U}_6(2).2$	2
$(2^2)_b$	$(2^2)_b \times \mathrm{S}_6(2)$	$S_3 \times \mathrm{S}_6(2)$	1
D_8	$2 \times \mathrm{S}_6(2)$	$\mathrm{S}_6(2)$	1
2^7	2^7	$\mathrm{S}_6(2)$	1
2^{11}	2^{11}	M_{23}	2
$2^2 \times 2_+^{1+8}$	2^3	$(3 \times \mathrm{U}_4(2)).2$	1
$(2^2 \times 2_+^{1+8}).2$	2^2	S_6	1
$2^{11}.2^3$	2^4	$\mathrm{L}_3(2)$	1
2^{6+8}	2^6	$S_3 \times A_7$	0
$2^{6+8}.2$	2^6	A_7	0
$2^{11}.2^4$	2^3	$3.S_5$	1
$2^{6+8}.2^2$	2^3	S_3^2	1
$(2^2 \times 2_+^{1+8}).2.2^4$	2^3	$3.S_3^2$	4
$\mathbf{2^{11}.2^2.2^3}$	2^2	S_3	1
$\mathbf{2^{11}.2^2.2^4}$	2^3	$3^2.2$	4
$\mathbf{2^{6+8}.D_8}$	2^2	S_3	1
$\mathbf{2^{6+8}.2^3}$	2^3	S_3	1
D	2^2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	1
3	$3 \times \mathrm{O}_7(3)$	$2 \times \mathrm{O}_7(3)$	2
3^6	3^6	$\mathrm{L}_4(3){:}2$	2
3_+^{1+8}	3	$2_-^{1+6}{:}3_+^{1+2}{:}2.S_4$	2
$3^3.3^6$	3^3	$\mathrm{L}_3(3) \times 2$	2
$3_+^{1+8}.3$	3	$2_+^{1+4}.S_3^2$	4
$3^3.3.3^3.3^3$	3^3	$\mathrm{L}_3(3) \times 2$	2
$\mathbf{3_+^{1+8}.3^2}$	3	$2.S_4 \times 2$	4
$\mathbf{3^3{:}3.3^3.3^3.3^2}$	3^2	$2.S_4 \times 2$	4
$\mathbf{3_+^{1+8}{:}3_+^{1+2}}$	3	$2.S_4 \times 2$	4
D	3	2^3	8
1	G	G	33
5	$5 \times S_7$	$4 \times S_7$	20
5^2	$5^2 \times 2$	$2 \times 4.S_4$	16

Table 8: Radical subgroups of $G = \mathrm{Fi}'_{24}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_3
1	G	G	2/0	0
2	$2.\mathrm{Fi}_{22}.2$	$\mathrm{Fi}_{22}.2$	0/0	0
$(2^2)_a$	$(2^2)_a.\mathrm{U}_6(2)$	$\mathrm{U}_6(2).S_3$	1/0	1
$(2^2)_b$	$(2^2)_b \times \mathrm{O}_8^+(2){:}3$	$(3 \times \mathrm{O}_8^+(2){:}3){:}2$	2/2	0
D_8	$2 \times \mathrm{S}_6(2)$	$\mathrm{S}_6(2)$	1/0	1
2^8	2^8	$\mathrm{O}_8^-(2)$	1/0	1
2^{11}	2^{11}	M_{24}	0/0	0
2_+^{1+12}	2	$3.\mathrm{U}_4(2){:}2$	2/0	0
$2_+^{1+12}.2$	2	$\mathrm{U}_4(2)$	1/0	1
2^{6+8}	2^6	$A_8 \times S_3$	1/0	1
$2^{11}.2^4$	2^6	A_8	1/0	1
2^{3+12}	2^3	$A_6 \times \mathrm{L}_3(2)$	0/2	0
$2^{11}.2^6$	2	$3.S_6$	1/0	1
$2^3.2^6.2^8$	2^3	$S_3 \times \mathrm{L}_3(2)$	1/0	1
$2_+^{1+12}.2^4$	2	$A_6 \times S_3$	0/2	0
$2^{3+12}.2^2$	2^2	$A_6 \times S_3$	0/2	0
$2^3.2^3.2^6.2^5$	2^3	$S_3 \times \mathrm{L}_3(2)$	1/0	1
$2^{6+8}.2^3$	2^3	$\mathrm{L}_3(2) \times S_3$	1/0	1
$2^{11}.2^3.2^4$	2^3	$\mathrm{L}_3(2)$	1/0	1
$2^{11}.2^{1+6}$	2^3	$\mathrm{L}_3(2)$	1/0	1
$2_+^{1+12}.2.2^4$	2	S_3^3	1/0	1
$2_+^{1+12}.2^4.2$	2	$2.A_6$	0/2	0
$2^{11}.2^2.2^6$	2^2	S_3^2	1/0	1
$2^{11}.2^4.2^4$	2	S_3^2	1/0	1
$2^{1+12}.2.2^4.2$	2	S_3^2	1/0	1
$2^{1+12}.2^2.2^4$	2	S_3^2	1/0	1
$2^{6+8}.2^4.2$	2	S_3^2	1/0	1
$2^{6+8}.2^3.2^2$	2^2	S_3^2	1/0	1
$\mathbf{2^{6+8}.2^4.2^2}$	2	S_3	1/0	1
$\mathbf{2^{6+8}.2^3.2^3}$	2^2	S_3	1/0	1
$\mathbf{2^{11}.2^2.2^3.2^4}$	2	S_3	1/0	1
$\mathbf{2^{1+12}.2^4.2^2.2}$	2	S_3	1/0	1
$\mathbf{2^{3+12}.(D_8 \times 2^2)}$	2	S_3	1/0	1
D	2	1	1/0	1
1	G	G	1/0	
3	$3 \times \mathrm{O}_8^+(3){:}3$	$(\mathrm{O}_8^+(3){:}3){:}2$	0/0	
3^2	$3^2 \times G_2(3)$	$(2 \times G_2(3)){:}2$	2/2	
3^7	3^7	$\mathrm{O}_7(3)$	1/0	
3_+^{1+10}	3	$\mathrm{U}_5(2){:}2$	1/0	
$3_+^{1+10}.3$	3	$\mathrm{U}_4(2){:}2$	2/0	
$3^3.3^4.3^3.3^3$	3^3	$\mathrm{L}_3(3) \times 2$	2/0	
$3^2.3^4.3^8$	3^2	$(A_5 \times 2.A_4){:}2$	1/0	
$\mathbf{3_+^{1+10}.3^4}$	3	$S_5 \times 2$	2/0	
$\mathbf{3_+^{1+10}.(3 \times 3_+^{1+2})}$	3	$2 \times 2.S_4$	4/0	
$\mathbf{3^2.3^4.3^8.3}$	3^2	$(2 \times 2.A_4).2$	4/0	
$3^2.3^4.3^8.3^2$	3	2^3	8/0	
1	G	G	26/12	20
5	$5 \times A_9$	$(2 \times A_9).2$	10/0	10
5^2	$5^2 \times A_4$	$(4.A_4 \times A_4).2$	38/8	30
1	G	G	41/8	29
7	$7 \times A_7$	$6 \times A_7$	24/0	12
$\mathbf{(7^2)_a}$	$(7^2)_a$	$2.\mathrm{L}_2(7).2$	2	2
$\mathbf{(7^2)_b}$	$(7^2)_b$	$2.\mathrm{L}_2(7).2$	2	2
7_+^{1+2}	7	$S_3 \times 6$	12/6	18

Table 9: Radical subgroups of $G = \mathrm{He}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	2/0
$(2^2)_a$	$(2^2)_a \times \mathrm{L}_3(2)$	$S_3 \times \mathrm{L}_3(2)$	1/0
$(2^2)_b$	$(2^2)_b.\mathrm{L}_3(4)$	$\mathrm{L}_3(4).S_3$	1/0
D_8	$2 \times \mathrm{L}_3(2)$	$\mathrm{L}_3(2)$	1/0
$(2^6)_a$	$(2^6)_a$	$3.S_6$	1
$(2^6)_b$	$(2^6)_b$	$3.S_6$	1
2_+^{1+6}	2	$\mathrm{L}_3(2)$	1/0
$(2^2.2^6)_a$	2^2	S_3^2	1
$(2^2.2^6)_b$	2^2	S_3^2	1
$2^4.2^4$	2^4	S_3^2	1/0
$\mathbf{(2_+^{1+6}.2^2)_a}$	2	S_3	1
$\mathbf{(2_+^{1+6}.2^2)_b}$	2	S_3	1
$\mathbf{(2^2.2^3.2^4)_a}$	2	S_3	1
$\mathbf{(2^2.2^3.2^4)_b}$	2	S_3	1
D	2	1	1/0

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	0/2
$(3)_a$	$(3)_a.A_7$	S_7	0/0
$(3)_b$	$(3)_b \times \mathrm{L}_2(7)$	$2 \times \mathrm{L}_2(7)$	2/4
$\mathbf{3^2}$	$3^2 \times 2^2$	$2^2.\mathrm{GL}_2(3)$	3/6
3_+^{1+2}	3	D_8	5/0
1	G	G	6/6
5	$5 \times A_5$	$A_5.4$	4/0
5^2	5^2	$4.A_4$	6/8
1	G	G	3/2
7	$7 \times \mathrm{L}_2(7)$	$3 \times \mathrm{L}_2(7)$	3/0
$\mathbf{7^2}$	7^2	$\mathrm{SL}_2(7)$	1/0
7_+^{1+2}	7	$S_3 \times 3$	9/0

Table 10: Radical subgroups of $G = \mathrm{HN}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	1/0
2	2.HS.2	HS.2	0/0
2^2	$2^2 \times A_8$	$(3 \times A_8)$:2	1/0
D_8	$2 \times S_6$	$A_6.2^2$	0/0
Q_8	2×5:4	$(5$:4$) \times S_3$	1/0
SD_{16}	2×5:2	5:4	1/0
2^6	2^6	$\mathrm{U}_4(2)$	1/0
2_+^{1+8}	2	$A_5^2.2$	0/0
$\mathbf{2_+^{1+8}.2}$	2	A_5	1/0
$\mathbf{2_+^{1+8}.2^2}$	2	$3 \times A_5$	1/2
$2^3.2^2.2^6$	2^3	$3 \times \mathrm{L}_3(2)$	1/2
$\mathbf{2^2.2.2^2.2^4.2^4}$	2^2	$3 \times S_3$	1/2
$\mathbf{2_+^{1+8}.2^4}$	2	$3 \times S_3$	1/2
D	2	3	1/2

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	5/4
3	$3 \times A_9$	A_9:2	2/0
3^2	$3^2 \times A_6$	$(4 \times A_6).2^2$	7/0
3^4	3^4	$2.A_4^2.4$	2/2
$\mathbf{3^4.3}$	3^2	$\mathrm{GL}_2(3)$	2/0
$\mathbf{3_+^{1+4}}$	3	$4.A_5$	0/6
D	3	4×2	4/4
1	G	G	2/2
5	$5 \times \mathrm{U}_3(5)$	$(2 \times \mathrm{U}_3(5)).2$	4/0
$\mathbf{5^2.5_+^{1+2}}$	5^2	$4.A_5$	2/0
$\mathbf{5_+^{1+4}}$	5	$2_-^{1+4}.5.4$	6/0
D	5	2×4	8/0

Table 11: Radical subgroups of $G = \mathrm{HS}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	0/0
2	$2 \times A_6.2^2$	$A_6.2^2$	0/0
2^2	$2^2 \times (5$:4$)$	$3 \times (5$:4$)$	1/2
2^4	2^4	S_6	1/0
4^3	4^3	$\mathrm{L}_3(2)$	1/0
$4 \star 2^{1+4}$	4	S_5	0/0
$\mathbf{2^4.2^3}$	2	S_3	1/0
$\mathbf{4^3.2^2}$	2^2	S_3	1/0
$\mathbf{2^{1+4} \star (4.2^2)}$	4	S_3	1/0
$4^3.D_8$	2	1	1/0

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_2
1	G	G	3/0	2/4
3	$3 \times S_5$	$2 \times S_5$	2/0	0/2
3^2	$3^2 \times 2$	$2 \times SD_{16}$	8/6	3/2
1	G	G	2/0	1/0
5	$5 \times A_5$	$4 \times A_5$	4/0	0/0
5_+^{1+2}	5	8.2	6/4	0/10

Table 12: Radical subgroups of $G = \mathrm{J}_1$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	5
2	$2 \times A_5$	A_5	1
2^3	2^3	7:3	5

Table 13: Radical subgroups of $G = \mathrm{J}_2$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	0/0
2^2	$2^2 \times A_5$	$3 \times A_5$	1/2
$\mathbf{2^{1+4}_-}$	2	A_5	1/0
$\mathbf{2^{2+4}}$	2^2	$3 \times S_3$	1/2
$2^{2+4}.2$	2	3	1/2

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_2
1	G	G	0/2	1/0
$(3)_a$	$(3)_a.A_6$	A_6:2	2/0	0/2
$(3)_b$	$(3)_b \times A_4$	$2 \times A_4$	2/0	0/0
3^{1+2}_+	3	8	2/6	2/6
1	G	G	3/0	1/2
5	$5 \times A_5$	$2 \times A_5$	2/0	0/0
5^2	5^2	D_{12}	6/0	6/0

Table 14: Radical subgroups of $G = \mathrm{J}_3$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_3
1	G	G	4/0	0
$\mathbf{2^4}$	2^4	$3 \times A_5$	1/2	3
$\mathbf{2^{1+4}_-}$	2	A_5	1/0	1
$\mathbf{2^{2+4}}$	2^2	$3 \times S_3$	1/2	3
$2^{2+4}.2$	2	3	1/2	3

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	2/0
3	$3 \times A_6$	A_6:2	2/0
$3^2.(3 \times 3^2)$	3^2	8	2/6

Table 15: Radical subgroups of $G = \mathrm{J}_4$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	3
2^{10}	2^{10}	$\mathrm{L}_5(2)$	1
2^{11}	2^{11}	M_{24}	0
2^{1+12}	2	$3.\mathrm{M}_{22}$:2	1
$2^{10}.2^4$	2^4	$\mathrm{L}_4(2)$	1
$2^{11}.2^4$	2^6	A_8	1
2^{3+12}	2^3	$S_5 \times \mathrm{L}_3(2)$	0
$2^{3+12}.2$	2^3	$S_3 \times \mathrm{L}_3(2)$	1
$2^{1+12}.2^3$	2	$S_3 \times \mathrm{L}_3(2)$	1
$2^3.2^{6+8}$	2^3	$S_3 \times \mathrm{L}_3(2)$	1
$2^2.2^{5+10}$	2^2	$S_5 \times S_3$	0
$2^{1+12}.2^4$	2	$3.S_6$	1
$2^{3+12}.2^2$	2	$S_3 \times S_5$	0
$2^{10}.2^{3+4}$	2	$\mathrm{L}_3(2)$	1
$2^{3+12}.D_8$	2^3	$\mathrm{L}_3(2)$	1
$2^{3+12}.2^3$	2^2	S_3^2	1
$2^{1+12}.2^{2+3}$	2	S_3^2	1
$2^{11}.2^{1+6}$	2^3	$\mathrm{L}_3(2)$	1
$2^{1+12}.2^5$	2	S_5	0
$2^{1+12}.2^2.2^4$	2	S_3^2	1
$2^{1+12}.2.2^{2+3}$	2	S_3^2	1
$2^{3+12}.2^4$	2^2	S_3^2	1
$\mathbf{2^{1+12}.2^3.2^3}$	2	S_3	1
$\mathbf{2^{3+12}.2^3.2^2}$	2^2	S_3	1
$\mathbf{2^{11}.2^2.2^3.2^4}$	2	S_3	1
$\mathbf{2^{1+12}.2^{2+5}}$	2	S_3	1
$\mathbf{2^{1+12}.2.2^3.2^3}$	2	S_3	1
D	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	13
3	$6.\mathrm{M}_{22}$	$2.\mathrm{M}_{22}.2$	7
$\mathbf{3^2}$	$3^2 \times 2^3$	$2^3.2S_4$	9
3^{1+2}_+	6	$(2 \times 8).2$	14
1	G	G	13
11^{1+2}_+	11	$5 \times 2S_4$	40

Table 16: Radical subgroups of $G = \mathrm{Ly}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	10
2	$2A_{11}$	A_{11}	0
2^3	2^3	$\mathrm{L}_3(2)$	1
$(Q_8)_a$	$2A_5.2$	$S_3 \times S_5$	0
$(Q_8)_b$	$2A_7$	$(3 \times A_7).2$	0
2^4	$2^4 \times 3$	$3A_7$	4
$2.D_8$	$2A_5$	S_5	0
2^{1+4}_-	2	S_5	0
$(2^{1+4}_+)_a$	2	S_3^2	1
$(2^{1+4}_+)_b$	2×3	$3.\mathrm{GO}^+_4(2)$	1
2^{2+4}	$2^2 \times 3$	$3.S_3^2$	1
$\mathbf{2.(D_8 \times 2^2)}$	2	S_3	1
$\mathbf{2.2^4{:}2}$	2	S_3	1
$\mathbf{2^{1+4}.2}$	2×3	$3 \times S_3$	3
$\mathbf{2^2.[2^5]}$	2^3	S_3	1
$2^{2+4}.2$	2	S_3	1
$\mathbf{2.[2^6]}$	2	S_3	1
$2^{2+4}.2.2$	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	5
3	3McL	McL.2	3
$\mathbf{3^5}$	3^5	$2 \times \mathrm{M}_{11}$	2
$\mathbf{3^{2+4}}$	3^2	$2A_5.D_8$	6
$3^{2+4}.3$	3^2	$2 \times Q_8.2$	14
1	G	G	5
5^3	5^3	$\mathrm{L}_3(5)$	1
$\mathbf{5^{1+4}_+}$	5	$4S_6$	14
$\mathbf{5^3.5^2}$	5^2	$\mathrm{GL}_2(5)$	4
$5^{1+4}_+.5$	5	4^2	16

Table 17: Radical subgroups of $G = \mathrm{M}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	3
2	2B	B	0
2^2	$2^2.{}^2E_6(2)$	${}^2E_6(2).S_3$	1
D_8	$2.F_4(2)$	$F_4(2).2$	0
Q_8	$2.{}^2F_4(2)$	$S_3 \times {}^2F_4(2)$	1
SD_{24}	$2 \times {}^2F_4(2)$	${}^2F_4(2)$	1
2_+^{1+24}	2	Co_1	0
2^{10+16}	2^{10}	$\Omega_{10}^+(2)$	1
$(2_+^{1+24}.2^2)_a$	2	$(3 \times G_2(4)).2$	1
$(2_+^{1+24}.2^2)_b$	2	$S_3 \times G_2(2)$	1
$2_+^{1+24}.D_8$	2	$G_2(2)$	1
$2_+^{1+24}.2^{1+8}$	2	$\mathrm{O}_8^+(2)$	1
$2^5.2^{10}.2^{20}$	2^5	$S_3 \times \mathrm{L}_5(2)$	1
$2^2.2^{11}.2^{22}$	2^2	$\mathrm{M}_{24} \times S_3$	0
$2^{10+16}.2^{10}$	2^5	$\mathrm{L}_5(2)$	1
$2^5.2^{10}.2^{20}.2$	2^5	$\mathrm{L}_5(2)$	1
$2_+^{1+24}.2^{11}$	2	M_{24}	0
$(2_+^{1+24}.2^{1+8}.2^6.2^3)_a$	2	$\mathrm{L}_3(2)$	1
$(2_+^{1+24}.2^{1+8}.2^6.2^3)_b$	2	$\mathrm{L}_3(2)$	1
$(2_+^{1+24}.2^{1+8}.2^6.2^3)_c$	2	$\mathrm{L}_3(2)$	1
$(2_+^{1+24}.2^{1+8}.2^6.2^4)_a$	2	S_3^2	1
$(2_+^{1+24}.2^{1+8}.2^6.2^4)_b$	2	S_3^2	1
$(2_+^{1+24}.2^{1+8}.2^6.2^4)_c$	2	S_3^2	1
$2^5.2^{10}.2^{20}.2^4$	2^4	$S_3 \times \mathrm{L}_4(2)$	1
$2^3.2^6.2^{12}.2^{18}$	2^3	$3.S_6 \times \mathrm{L}_3(2)$	1
$2^2.2^{11}.2^{22}.2^4$	2^2	$\mathrm{L}_4(2) \times S_3$	1
$2_+^{1+24}.2^{4+12}$	2	$S_3 \times 3.S_6$	1
$2_+^{1+24}.2^{2+12}$	2	$S_3 \times \mathrm{L}_4(2)$	1
$\mathbf{2_+^{1+24}.2^{1+8}.2^6.2^4.2}$	2	S_3	1
$\mathbf{(2_+^{1+24}.2^{1+8}.2^6.2^3.2^2)_a}$	2	S_3	1
$\mathbf{(2_+^{1+24}.2^{1+8}.2^6.2^3.2^2)_b}$	2	S_3	1
$\mathbf{(2_+^{1+24}.2^{1+8}.2^6.2^3.2^2)_c}$	2	S_3	1
$2^5.2^{10}.2^{20}.(2 \times 2^4)$	2^4	$\mathrm{L}_4(2)$	1
$2_+^{1+24}.2^{4+12}.2$	2	$3.S_6$	1
$(2_+^{1+24}.2^{1+8}.2^6)_a$	2	$\mathrm{L}_4(2)$	1
$(2_+^{1+24}.2^{1+8}.2^6)_b$	2	$\mathrm{L}_4(2)$	1
$(2_+^{1+24}.2^{1+8}.2^6)_c$	2	$\mathrm{L}_4(2)$	1
$2_+^{1+24}.2^{1+8}.2^{1+8}.2$	2	S_3^2	1
$(2^3.2^6.2^{12}.2^{18}.2^2)_a$	2^3	$S_3^2 \times \mathrm{L}_3(2)$	1
$(2^3.2^6.2^{12}.2^{18}.2^2)_b$	2^3	$S_3^2 \times \mathrm{L}_3(2)$	1
$(2^2.2^{11}.2^{22}.2^6)_a$	2^2	$\mathrm{L}_3(2) \times S_3^2$	1
$(2^2.2^{11}.2^{22}.2^6)_b$	2^2	$3.S_6 \times S_3$	1
$(2^3.2^6.2^{12}.2^{18}.[2^3])_a$	2^3	$S_3 \times \mathrm{L}_3(2)$	1
$(2^3.2^6.2^{12}.2^{18}.[2^3])_b$	2^3	$S_3 \times \mathrm{L}_3(2)$	1
$(2^3.2^6.2^{12}.2^{18}.[2^3])_c$	2^3	$S_3 \times \mathrm{L}_3(2)$	1
$2^2.2^{11}.2^{22}.2^3.2^4$	2^2	$\mathrm{L}_3(2) \times S_3$	1
$2^2.2^{11}.2^{22}.2^{1+6}$	2^2	$\mathrm{L}_3(2) \times S_3$	1
$(2_+^{1+24}.2^{2+12}.2^3)_a$	2	$S_3 \times \mathrm{L}_3(2)$	1
$(2_+^{1+24}.2^{2+12}.2^3)_b$	2	$S_3 \times \mathrm{L}_3(2)$	1
$2^3.2^6.2^{12}.2^{18}.[2^4]$	2^3	$\mathrm{L}_3(2)$	1
$2^2.2^{11}.2^{22}.2^6.2^2$	2^2	S_3^3	1
$2^2.2^{11}.2^{22}.2^4.2^4$	2^2	S_3^3	1
$2^2.2^{11}.2^{22}.[2^8]$	2^2	S_3^3	1
$2_+^{1+24}.2^{2+12}.2^4$	2	S_3^3	1
$2_+^{1+24}.2^{1+8}.2_+^{1+8}$	2	S_3^3	1
$(2^2.2^{11}.2^{22}.[2^9])_a$	2^2	S_3^2	1
$(2^2.2^{11}.2^{22}.[2^9])_b$	2^2	S_3^2	1
$(2^2.2^{11}.2^{22}.[2^9])_c$	2^2	S_3^2	1
$(2^2.2^{11}.2^{22}.[2^9])_d$	2^2	S_3^2	1
$(2_+^{1+24}.2^{2+12}.2^5)_a$	2	S_3^2	1
$(2_+^{1+24}.2^{2+12}.2^5)_b$	2	S_3^2	1
$\mathbf{2_+^{1+24}.2^{11}.2^2.2^3.2^4}$	2	S_3	1
$\mathbf{2^2.2^{11}.2^{22}.[2^{10}]}$	2^2	S_3	1
$2_+^{1+24}.2^{2+12}.(2 \times [2^6])$	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	1
$(3)_a$	$(3)_a \times \mathrm{Th}$	$2 \times \mathrm{Th}$	8
$(3)_b$	$(3)_b.\mathrm{Fi}_{24}'$	Fi_{24}	2
3^2	$3^2 \times O_8^+(3)$	$(2 \times \mathrm{O}_8^+(3)).S_4$	2
3_+^{1+2}	$3 \times G_2(3)$	$(2^2 \times G_2(3)).2$	5
3^8	3^8	$\mathrm{O}_8^-(3).2$	2
3_+^{1+12}	3	2.Suz:2	1
$3_+^{1+12}.3$	3	$2U_4(3).2^2$	4
$\mathbf{3_+^{1+12}.3^2}$	3	$2(8 \times A_6).2$	7
$3^2.3^5.3^{10}$	3^2	$\mathrm{M}_{11} \times 2.S_4$	2
$3^{3+2+6+6}$	3^3	$\mathrm{L}_3(3) \times SD_{16}$	7
$\mathbf{3_+^{1+12}.3^5}$	3	$2^2 \times \mathrm{M}_{11}$	4
$\mathbf{3_+^{1+12}.3^{2+4}}$	3	$2.S_4 \times SD_{16}$	14
$\mathbf{3^{2+5+10}.3^2}$	3^2	$2.S_4 \times SD_{16}$	14
$3_+^{1+12}.3^{2+4}.3$	3	$2^2 \times SD_{16}$	28
1	G	G	31
5	$5 \times \mathrm{HN}$	$(2 \times \mathrm{HN}).2$	10
5^2	$5^2 \times \mathrm{U}_3(5)$	$(4.2^2 \times \mathrm{U}_3(5)).S_3$	28
$\mathbf{5^4}$	5^4	$(3 \times 2.\mathrm{L}_2(25)).2$	3
5^{3+3}	5^3	$2 \times \mathrm{L}_3(5)$	2
5_+^{1+6}	5	$2.\mathrm{J}_2{:}4$	18
$\mathbf{5^{2+2+4}}$	5^2	$S_3 \times \mathrm{GL}_2(5)$	12
$\mathbf{5_+^{1+6}.5}$	5	$4 \times 2S_5$	8
$5_+^{1+6}.5^2$	5	$S_3 \times 4^2$	48
1	G	G	49
7	$7 \times \mathrm{He}$	$(3 \times \mathrm{He}).2$	1
$(7^2)_a$	$(7^2)_a \times \mathrm{L}_2(7)$	$((3 \times 2.A_4) \times \mathrm{L}_2(7)).2$	24
$\mathbf{(7^2)_b}$	$(7^2)_b$	$\mathrm{SL}_2(7)$	1
$\mathbf{7^2.7^{1+2}}$	7^2	$\mathrm{GL}_2(7)$	6
$\mathbf{7_+^{1+4}}$	7	$3 \times 2.S_7$	1
$7_+^{1+4}.7$	7	6^2	27
1	G	G	86
11	$11 \times \mathrm{M}_{12}$	$(5 \times \mathrm{M}_{12}){:}2$	50
11^2	11^2	$5 \times 2.A_5$	45
1	G	G	85
13	$13 \times \mathrm{L}_3(3)$	$(6 \times \mathrm{L}_3(3)).2$	42
$\mathbf{13^2}$	13^2	$4.\mathrm{L}_2(13).2$	4
13_+^{1+2}	13	$3 \times 4.S_4$	48

Comment: The red entries for $p = 2$ correct some errors in [32].

Table 18: Radical subgroups of $G = \mathrm{M}_{11}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	2
$\mathbf{2^2}$	2^2	S_3	1
$\boldsymbol{Q_8}$	2	S_3	1
SD_{2^4}	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	1
3^2	3^2	SD_{2^4}	7

Table 19: Radical subgroups of $G = \mathrm{M}_{12}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	0/0
2	$2 \times S_5$	S_5	0/0
2^2	$2^2 \times S_3$	$S_3 \times 3$	1/2
$\mathbf{2^2.2^3}$	2^2	S_3	1/0
$\mathbf{2^{1+4}_+}$	2	S_3	1/0
D	2	1	1/0

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_2
1	G	G	1/0	0/0
3	$3 \times A_4$	$A_4 \times 2$	2/0	0/0
$\mathbf{(3^2)_a}$	$(3^2)_a$	$\mathrm{GL}_2(3)$	2	2
$\mathbf{(3^2)_b}$	$(3^2)_b$	$\mathrm{GL}_2(3)$	2	2
3^{1+2}_+	3	2^2	2/2	2/2

Table 20: Radical subgroups of $G = \mathrm{M}_{22}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_3
1	G	G	0/0	1
2^3	2^3	$\mathrm{L}_3(2)$	1/0	1
$(2^4)_a$	$(2^4)_a$	A_6	0/2	0
$(2^4)_b$	$(2^4)_b$	S_5	0/0	0
$\mathbf{2^2.2^3}$	2^2	S_3	1/0	1
$\mathbf{2.2^2.2^3}$	2	S_3	1/0	1
$\mathbf{2^2.2^4}$	2^2	S_3	1/0	1
D	2	1	1/0	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_2	λ_4
1	G	G	3/0	0/2	2
3	$3 \times A_4$	S_4	2/0	2/0	0
3^2	3^2	Q_8	3/2	3/2	5

Table 21: Radical subgroups of $G = \mathrm{M}_{23}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	2
2^3	2^3	$\mathrm{L}_3(2)$	1
$(2^4)_a$	$(2^4)_a$	A_7	0
$(2^4)_b$	$(2^4)_b$	$(3 \times A_5)$:2	1
$\mathbf{2^2.2^3}$	2^2	S_3	1
$\mathbf{2.2^2.2^3}$	2	S_3	1
$2^2.2^4$	2^2	$3^2.2$	4
D	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	5
3	$3 \times A_5$	S_5	1
3^2	3^2	8.2	7

Table 22: Radical subgroups of $G = \mathrm{M}_{24}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	0
2^4	2^4	A_8	1
$(2^6)_a$	$(2^6)_a$	$\mathrm{L}_3(2) \times S_3$	1
$(2^6)_b$	$(2^6)_b$	$3.S_6$	1
2^{1+6}_+	2	$\mathrm{L}_3(2)$	1
$2^3.2^4$	2^3	$\mathrm{L}_3(2)$	1
$(2^2.2^6)_a$	2^2	S_3^2	1
$(2^2.2^6)_b$	2^2	S_3^2	1
$2^4.2^4$	2^4	S_3^2	1
$\mathbf{(2^2.2^3.2^4)_a}$	2^2	S_3	1
$\mathbf{(2^2.2^3.2^4)_b}$	2^2	S_3	1
$\mathbf{(2.2^3.2^5)_a}$	2	S_3	1
$\mathbf{(2.2^3.2^5)_b}$	2	S_3	1
D	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	1
$(3)_a$	$(3)_a.A_6$	S_6	2
$(3)_b$	$(3)_b \times \mathrm{L}_3(2)$	$2 \times \mathrm{L}_3(2)$	6
$\mathbf{3^2}$	3^2	$\mathrm{GL}_2(3)$	2
3^{1+2}_+	3	D_8	5

Table 23: Radical subgroups of $G = \mathrm{McL}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_3
1	G	G	2/2	1
2	$2.A_8$	A_8	1/0	1
$(2^4)_a$	$(2^4)_a$	A_7	0	2
$(2^4)_b$	$(2^4)_b$	A_7	0	2
2_+^{1+4}	2	S_3^2	1/0	1
$\mathbf{2^{2+4}}$	2^2	$3^2.2$	2/2	0
$\mathbf{(2.2^2.2^3)_a}$	2	S_3	1	1
$\mathbf{(2.2^2.2^3)_b}$	2	S_3	1	1
$2^{2+4}.2$	2	1	1/0	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_3
1	G	G	1/2	
$\mathbf{3^4}$	3^4	M_{10}	2/0	
$\mathbf{3_+^{1+4}}$	3	$2.S_5$	1/2	
$3_+^{1+4}.3$	3	Q_8	5/0	
1	G	G	3/2	2
5_+^{1+2}	5	3:8	8/4	12

Table 24: Radical subgroups of $G = \mathrm{O'N}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_3
1	G	G	5/0	5
2^2	$2^2 \times (3^2{:}4)$	$S_3 \times (3^2{:}4)$	0/2	0
4	$4.\mathrm{L}_3(4)$	$\mathrm{L}_3(4){:}2$	0/0	0
D_8	$2 \times 3^2{:}4$	$3^2{:}Q_8$	1/0	0
4^3	4^3	$\mathrm{L}_3(2)$	1/0	1
$\mathbf{4.2^4}$	4	A_5	1/0	1
$\mathbf{(4 \times 2^2).2^4}$	4	S_3	1/0	1
$\mathbf{(4^2 \times 2).2^3}$	2^2	S_3	1/0	1
D	2	1	1/0	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_3
1	G	G	6/0	
3^2	$3^2 \times A_6$	$(4 \times A_6).2$	3/2	
3^4	3^4	$2_+^{1+4}.D_{10}$	6/8	
1	G	G	6/0	1
$\mathbf{(7^2)_a}$	$(7^2)_a$	$\mathrm{SL}_2(7){:}2$	2	2
$\mathbf{(7^2)_b}$	$(7^2)_b$	$\mathrm{SL}_2(7){:}2$	2	2
7_+^{1+2}	7	$3 \times D_8$	9/6	15

Table 25: Radical subgroups of $G = \mathrm{Ru}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	0
2^2	$2^2 \times \mathrm{Sz}(8)$	$\mathrm{Sz}(8){:}3$	3
2^6	2^6	$\mathrm{U}_3(3){:}2$	1
2.2^{4+6}	2	S_5	0
2^{3+8}	2^3	$\mathrm{L}_3(2)$	1
$\mathbf{2.2^{4+6}{:}2}$	2	S_3	1
$\mathbf{2^{3+8}{:}2^2}$	2^2	S_3	1
$\mathbf{2.2^{4+6}{:}2^2}$	2	S_3	1
$2.2^{4+6}{:}D_8$	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_2
1	G	G	16	5
3	$3.\mathrm{M}_{10}$	$A_6.2^2$	4	4
$\mathbf{3^2}$	3^2	$\mathrm{GL}_2(3)$	2	2
3_+^{1+2}	3	SD_{16}	7	7
1	G	G	6	0
5	$5 \times A_5$	$4 \times A_5$	4	0
$\mathbf{5^2}$	5^2	$\mathrm{GL}_2(5)$	4	4
5_+^{1+2}	5	$4.D_8$	14	14

Table 26: Radical subgroups of $G = \mathrm{Suz}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$	λ_2	λ_3	λ_6
1	G	G	0/0		0	
$(2^2)_a$	$(2^2)_a \times \mathrm{L}_3(4)$	$(3 \times \mathrm{L}_3(4)).2$	1/0		0	
$(2^2)_b$	$(2^2)_b \times (3^2{:}Q_8)$	$S_3 \times (3^2{:}Q_8)$	1/0		0	
D_8	$2 \times (3^2{:}Q_8)$	$3^2{:}Q_8$	1/0		0	
2_-^{1+6}	2	$\mathrm{O}_5(3)$	1/0		1	
2^{2+8}	2^2	$A_5 \times S_3$	1/0		1	
2^{4+6}	2^4	$3.A_6$	0/2		2	
$\mathbf{2_-^{1+6}.2^4}$	2	A_5	1/0		1	
$\mathbf{2^{2+8}.2^2}$	2^2	$3 \times S_3$	1/2		3	
$\mathbf{2^{4+6}.2^2}$	2	$3 \times S_3$	1/2		3	
$2^{2+8}.2^2.2$	2	3	1/2		3	
1	G	G	0/0	0/2		
3	$3.\mathrm{U}_4(3)$	$\mathrm{U}_4(3).2$	2/0	0/0		
3^2	$3^2 \times A_6$	$A_6{:}Q_8$	3/2	0/0		
$\mathbf{3^5}$	3^5	M_{11}	1/0	1/0		
3^{2+4}	3^2	$2.(A_4 \times 2^2).2$	5/0	2/0		
$3^{2+4}.3$	3^2	SD_{16}	7/0	7/0		
1	G	G	7/6	4/4	12	8
$(5)_a$	$(5)_a \times A_6$	$A_6{:}4$	2/4	6/0	4	4
$(5)_b$	$(5)_b \times A_5$	$A_5{:}4$	4/0	0/0	4	0
5^2	5^2	$4 \times S_3$	12/0	0/12	12	12

Table 27: Radical subgroups of $G = \mathrm{Th}$.

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	3
2^5	2^5	$\mathrm{L}_5(2)$	1
$2^5.2^4$	2^4	$\mathrm{L}_4(2)$	1
2_+^{1+8}	2	A_9	0
$(2^5.2^6)_a$	2^2	$S_3 \times \mathrm{L}_3(2)$	1
$(2^5.2^6)_b$	2^3	$\mathrm{L}_3(2) \times S_3$	1
$(2_+^{1+8}.2^2)_a$	2	$(3 \times A_5).2$	1
$(2_+^{1+8}.2^2)_b$	2	S_3^2	1
$2^5.2^6.2$	2^3	$\mathrm{L}_3(2)$	1
$(2_+^{1+8}.2^3)_a$	2	$\mathrm{L}_3(2)$	1
$(2_+^{1+8}.2^3)_b$	2	$\mathrm{L}_3(2)$	1
$\mathbf{2_+^{1+8}.D_8}$	2	S_3	1
$(2^5.2^6.2^2)_a$	2^2	S_3^2	1
$(2^5.2^6.2^2)_b$	2^2	S_3^2	1
$2_+^{1+8}.2^4$	2	S_3^2	1
$\mathbf{2^5.2^6.D_8}$	2^2	S_3	1
$\mathbf{2_+^{1+8}.2^3.2^2}$	2	S_3	1
$\mathbf{2_+^{1+8}.2_+^{1+4}}$	2	S_3	1
$\mathbf{2_+^{1+8}.2^4.2}$	2	S_3	1
$2_+^{1+8}.[2^6]$	2	1	1

R	$C_G(R)$	$N_G(R)/R$	$\lvert\mathrm{Irr}^0\rvert$
1	G	G	4
3	$3 \times G_2(3)$	$G_2(3).2$	2
$\mathbf{3^5}$	3^5	$2.S_6$	2
$\mathbf{(3^3 \times 3_+^{1+2}).3_+^{1+2}}$	3	$2.S_4$	2
$\mathbf{3^2.3^3.3^2.3^2}$	3^2	$2.S_4$	2
D	3	2^2	4
1	G	G	21
$\mathbf{5^2}$	5^2	$\mathrm{GL}_2(5)$	4
5_+^{1+2}	5	$4.S_4$	16
1	G	G	14
7	$7 \times \mathrm{L}_2(7)$	$(3 \times \mathrm{L}_2(7)):2$	6
7^2	7^2	$3 \times 2.S_4$	24