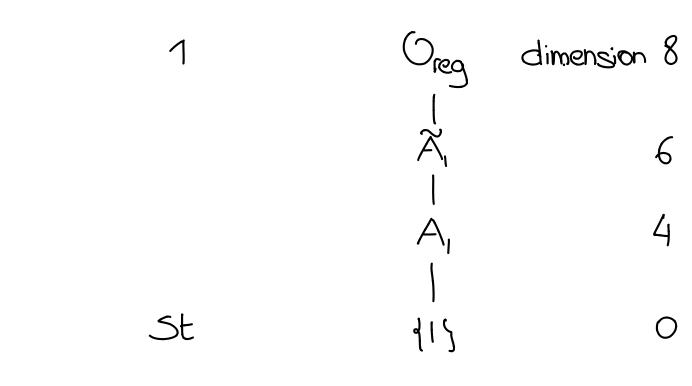
$G(\mathbb{F}_9) = Sp_4(\mathbb{F}_9)$

Oreq dimension 8

Oreg dimension 8

415

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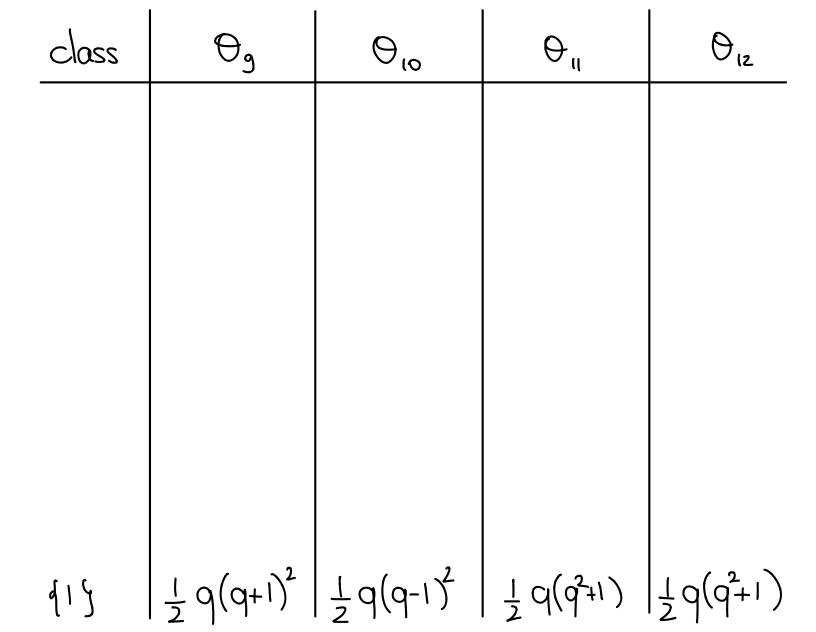


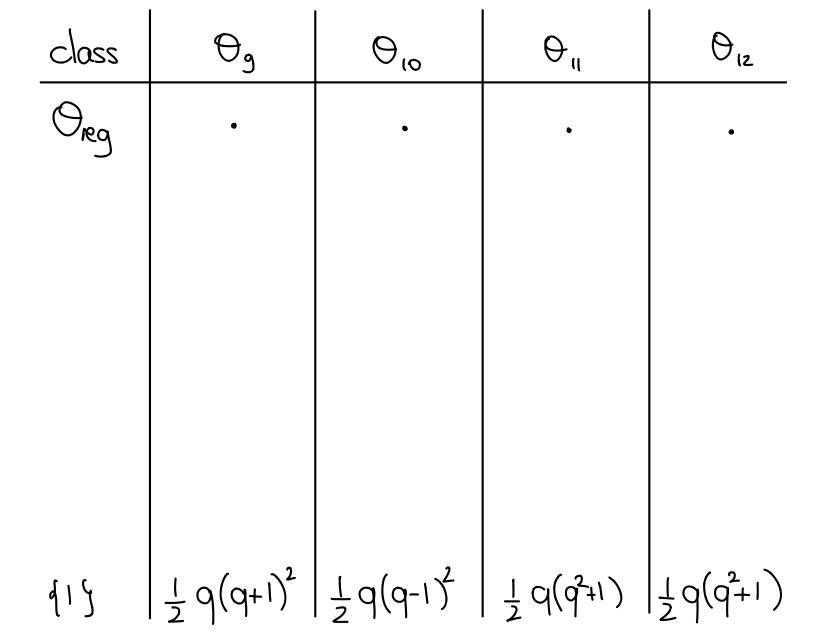
$$G(F_q) = Sp_4(F_q)$$

4 unipotent classes

1 Oreg dimension 8
$$\{0_9, \theta_{10}, \theta_{11}, \theta_{12}\}$$
 A_1 A_1 A_2 A_3 A_4 A_4 A_5 A_6 A

class	0 9	90	$\Theta_{\mathfrak{u}}$	O ₁₂





class	O 3	9,0	Θ,,	O _{lz}
Oreg	•	•	•	•
A_{I}	$\frac{1}{2}$ $q(q+1)$	- <u>1</u> q(q-1)	- <u>1</u> 9(9-1)	1/29(9+1)
919	$\left \frac{1}{2}q(q+1)^2\right $	$\frac{1}{2}q(q-1)$ $\frac{1}{2}q(q-1)^2$	$\frac{1}{2}q(q^2+1)$	$\frac{1}{2}q(q^2+1)$

class	$\Theta_{\mathfrak{I}}$	9,0	Θ,,	O ₁₂
Oreg	•	•	•	•
Ã	9	•	9	•
\tilde{A}_{1}	6	9	•	9
A	$\frac{1}{2}q(q+1)$	$-\frac{1}{2}q(q-1)$	- <u>1</u> 9(9-1)	1/29(9+1)
919	$\left \frac{1}{2}q(q+1)^2\right $	$\frac{1}{2}q(q-1)^2$	$\frac{1}{2}q(q^2+1)$	$\frac{1}{2}q(q^2+1)$

class	$\Theta_{\mathfrak{I}}$	9,0	Θ,,	O _{lz}
Oreg	•	•	•	•
Ã	9	•	9	•
$\tilde{\lambda}_{1}$	•	q	•	9
s Ã _I				·
s Ã,				
A	$\frac{1}{2}q(q+1)$	- <u>1</u> q(q-1)	- <u>1</u> 9(9-1)	1/29(9+1)
919	$\left \frac{1}{2}q(q+1)^2\right $	$\frac{1}{2}q(q-1)^2$	$\frac{1}{2}q(q^2+1)$	$\frac{1}{2}q(q^2+1)$

class	$\Theta_{\mathfrak{g}}$	00	$\Theta_{\mathfrak{u}}$	O ₁₂
Oreg	•	•	•	•
Ã	9	•	9	•
\tilde{A}_{1}	٥	9	•	9
s Ã,	1/2 (9+1)	1/2 (9-1)	$-\frac{1}{2}(9+1)$	$\frac{-1}{2}(9-1)$
s Ã,	$\frac{-1}{2}$ (9-1)	-1 (9+1)	$\frac{1}{2}(9-1)$	1/2 (9+1)
A	$\frac{1}{2}q(q+1)$	$-\frac{1}{2}q(q-1)$	- <u>1</u> 9(9-1)	1/2 q(q+1)
919	$\left \frac{1}{2}q(q+1)^2\right $	$\frac{1}{2}q(q-1)^2$	$\frac{1}{2}q(q^2+1)$	$\frac{1}{2}q(q^2+1)$

$$\chi_g = \frac{1}{2} \left(\Theta_g + \Theta_{10} + \Theta_{11} + \Theta_{12} \right)$$

$$\chi_{g} = \frac{1}{2} \left(\Theta_{g} + \Theta_{10} + \Theta_{11} + \Theta_{12} \right)$$

$$\chi_{10} = \frac{1}{2} \left(\Theta_{g} + \Theta_{10} - \Theta_{11} - \Theta_{12} \right)$$

$$\chi_{g} = \frac{1}{2} \left(\Theta_{g} + \Theta_{10} + \Theta_{11} + \Theta_{12} \right)$$

$$\chi_{10} = \frac{1}{2} \left(\Theta_{g} + \Theta_{10} - \Theta_{11} - \Theta_{12} \right)$$

$$\chi_{10} = \frac{1}{2} \left(\Theta_9 + \Theta_{10} - \Theta_{11} - \Theta_{12} \right)$$

$$\chi_{11} = \frac{1}{2} \left(\Theta_9 - \Theta_{10} + \Theta_{11} - \Theta_{12} \right)$$

orier transform
$$X_g = \frac{1}{2} \left(\frac{1}{2} \right)$$

$$\chi_g = \frac{1}{2} \left(\Theta_g + \Theta_{10} + \Theta_{11} + \Theta_{12} \right)$$

$$\chi_{10} = \frac{1}{2} \left(\Theta_g + \Theta_{10} - \Theta_{11} - \Theta_{12} \right)$$

$$x_{11} = \frac{1}{2} \left(\Theta_9 - \Theta_{10} + \Theta_{11} - \Theta_{12} \right)$$

 $\chi_{12} = \frac{1}{2} \left(\Theta_9 - \Theta_{10} - \Theta_{11} + \Theta_{12} \right)$

class	$\Theta_{\mathfrak{g}}$	90	$\Theta_{\mathfrak{u}}$	O ₁₂
Oreg	•	•	•	•
Ã	9	•	9	•
\tilde{A}_{1}	•	9	•	9
s Ã,	½ (q+1)	1/2 (9-1)	$-\frac{1}{2}(9+1)$	$\frac{-1}{2}(9-1)$
s Ã,	$\frac{-1}{2}(9-1)$	-1 (9+1)	$\frac{1}{2}(9-1)$	1/2 (9+1)
A	$\frac{1}{2}q(q+1)$	- <u>1</u> q(q-1)	- <u>1</u> 9(9-1)	129(q+1)
919	$\left \frac{1}{2}q(q+1)^2\right $	$\frac{1}{2}q(q-1)^2$	$\frac{1}{2}q(q^2+1)$	$\frac{1}{2}q(q^2+1)$

class	χ_{9}	9,0	Θ,,	O ₁₂
Oreg	•	•	•	•
Ã	9	•	9	•
\tilde{A}_{1}	9	9	•	9
s Ã,	•	1/2 (9-1)	$-\frac{1}{2}(9+1)$	$\frac{-1}{2}(9-1)$
s Ã,	•	-1/2 (9+1)	$\frac{1}{2}(9-1)$	1/2 (9+1)
A	9	$-\frac{1}{2}q(q-1)$	- <u>1</u> 9(9-1)	1/29(9+1)
919	$q(q^2+1)$	$\frac{1}{2}q(q-1)^2$	$\frac{1}{2}q(q^2+1)$	$\frac{1}{2}q(q^2+1)$

class	$\chi_{_{9}}$	χ_{\circ}	Θ,,	O ₁₂
Oreg	•	•	•	•
Ã	9	•	9	•
$\tilde{\lambda}_{1}$	9	•	•	9
s Ã,	•	9	$-\frac{1}{2}(9+1)$	$\frac{-1}{2}(9-1)$
s Ã,	•	-9	$\frac{1}{2}(9-1)$	1/2 (9+1)
A	9	•	- <u>1</u> 9(9-1)	½9(q+1)
919	$q(q^2+1)$	•	$\frac{1}{2}q(q^2+1)$	$\frac{1}{2}q(q^2+1)$

class	χ_{9}	χ°	$\chi_{_{\parallel}}$	O ₁₂
Oreg	•	•	•	•
Ã	9	•	9	•
Ã,	9	•	-9	9
s Ã,	•	9	•	$\frac{-1}{2}(9-1)$
s Ã,	•	-9		½(q+1)
A	9	•	•	1/2 9(9+1)
915	$q(q^2+1)$	•	92	$\frac{1}{2}q(q^2+1)$

class	$\chi_{_{9}}$	χ°	$\chi_{_{ }}$	$\chi_{_{l2}}$
Oreg	•	•	•	•
Ã,	9	•	9	•
\tilde{A}_{1}	9	•	-9	•
s Ã,	•	9	•	l
s Ã,	•	-9	•	ſ
A	9	•	•	92
919	$q(q^2+1)$	•	q²	92

class	(1,1)	(-1,E)	(1, ٤)	(-1,1)
Oreg	•	•	•	•
Ž_	9	•	9	•
Ã,	9	•	-9	•
s Ã _I	•	9	•	l
s A,	•	-9	•	ſ
A	9	•	•	92
919	$q(q^2+1)$	•	92	92