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REALIZATIONS OF INVOLUTIVE AUTOMORPHISMS σ AND G^σ OF EXCEPTIONAL LINEAR LIE GROUPS G, PART II, $G=E_7$

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M. Berger [1] classified involutive automorphisms σ of simple Lie algebras $\mathfrak{g}$ and determined the type of the subalgebras $\mathfrak{g}^\sigma$ of fixed points. In the preceding paper [Y], we found involutive automorphisms σ and realized the subgroups G^σ of fixed points explicity for the connected exceptional universal linear Lie groups G of type G_2, F_4 and E_6. In this paper we consider the case of type E_7. Our results are as follows.

G	G^σ	σ					
$E_7{}^C$	$(C^*\times E_6{}^C)/\boldsymbol{Z}_3$	ι					
	$SL(8, C)/\boldsymbol{Z}_2$	$\lambda\gamma$					
	$(SL(2, C)\times Spin(12, C))/\boldsymbol{Z}_2$	σ					
$E_7{}^C$	E_7	$\tau\lambda$					
E_7	$(U(1)\times E_6)/\boldsymbol{Z}_3$	ι					
	$SU(8)/\boldsymbol{Z}_2$	$\lambda\gamma$					
	$(SU(2)\times Spin(12))/\boldsymbol{Z}_2$	σ					
$E_7{}^C$	$E_{7(7)}$	$\tau\gamma$	$\tau\gamma\sigma$	$\tau\iota\gamma$	$\tau\lambda\iota\gamma$	$\tau\lambda\iota\gamma_C$	$\tau\lambda\iota\rho$
$E_{7(7)}$	$(\boldsymbol{R}^+\times E_{6(6)})\times 2$	ι					
	$(U(1)\times E_{6(2)})/\boldsymbol{Z}_3$				ι		
	$SU(8)/\boldsymbol{Z}_2$	$\lambda\gamma$					
	$SU(4, 4)/\boldsymbol{Z}_2\times 2$		$\lambda\gamma$				
	$SU^*(8)/\boldsymbol{Z}_2\times 2$			$\lambda\gamma$			
	$SL(8, \boldsymbol{R})/\boldsymbol{Z}_2\times 2$					$\lambda\gamma$	
	$(SL(2, \boldsymbol{R})\times spin(6, 6))/\boldsymbol{Z}_2\times 2$			σ			
	$(SU(2)\times spin^*(12))/\boldsymbol{Z}_2$						σ
$E_7{}^C$	$E_{7(-5)}$	$\tau\lambda\gamma$	$\tau\lambda\sigma$	$\tau\lambda\sigma'$	$\tau\lambda\gamma\rho$		
$E_{7(-5)}$	$(U(1)\times E_{6(2)}/\boldsymbol{Z}_3$	ι					
	$(U(1)\times E_{6(-14)})/\boldsymbol{Z}_3$		ι				

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