

\mathbf{A}_1 — $\mathfrak{sl}_2\mathbb{C}$ — real dimension 6

Center Z of the universal covering is $Z = \langle z \rangle \cong \mathbb{Z}_2$.

Maximally representable group is characterized by kernel 1.

Irreducible real representations ρ with $0 \leq \dim_{\mathbb{R}} \rho \leq 16$:

dimension	centralizer	dominant weight	kernel	represented group
4	\mathbb{R}	(λ_1, λ_1^*)	Z	$\mathrm{PSL}_2\mathbb{C}$
4	\mathbb{C}	$(\lambda_1, 0)$	1	$\mathrm{SL}_2\mathbb{C}$
6	\mathbb{C}	$(2\lambda_1, 0)$	Z	$\mathrm{PSL}_2\mathbb{C}$
8	\mathbb{C}	$(3\lambda_1, 0)$	1	$\mathrm{SL}_2\mathbb{C}$
9	\mathbb{R}	$(2\lambda_1, 2\lambda_1^*)$	Z	$\mathrm{PSL}_2\mathbb{C}$
10	\mathbb{C}	$(4\lambda_1, 0)$	Z	$\mathrm{PSL}_2\mathbb{C}$
12	\mathbb{C}	$(5\lambda_1, 0)$	1	$\mathrm{SL}_2\mathbb{C}$
12	\mathbb{C}	$(2\lambda_1, \lambda_1^*)$	1	$\mathrm{SL}_2\mathbb{C}$
14	\mathbb{C}	$(6\lambda_1, 0)$	Z	$\mathrm{PSL}_2\mathbb{C}$
16	\mathbb{C}	$(7\lambda_1, 0)$	1	$\mathrm{SL}_2\mathbb{C}$
16	\mathbb{R}	$(3\lambda_1, 3\lambda_1^*)$	Z	$\mathrm{PSL}_2\mathbb{C}$
16	\mathbb{C}	$(3\lambda_1, \lambda_1^*)$	Z	$\mathrm{PSL}_2\mathbb{C}$