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# McKay Centralizer Algebras

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## Abstract

For a finite subgroup  $G$  of the special unitary group  $SU_2$ , we study the centralizer algebra  $Zk(G) = \text{End}_G(V^{\otimes k})$  of  $G$  acting on the  $k$ -fold tensor product of its defining representation  $V = \mathbb{C}^2$ . The McKay correspondence relates the representation theory of these groups to an associated affine Dynkin diagram, and we use this connection to study the structure and representation theory of  $Zk(G)$  via the combinatorics of the Dynkin diagram. When  $G$  equals the binary tetrahedral, octahedral, or icosahedral group, we exhibit remarkable connections between  $Zk(G)$  and the Martin-Jones set partition algebras.

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