

# THE DIAGONAL CENTRALISER OF $SL(3)$ AND ITS E6-SYMMETRY

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## ABSTRACT

When studying the centraliser of the diagonal embedding of  $sl(2)$  in three copies of its enveloping algebra, one recovers the well-known Racah algebra, which appears in various contexts including the Racah problem in the theory of angular momentum and the study of the eponym family of orthogonal polynomials. Motivated by this famous example, we consider the centraliser of the diagonal embedding of  $sl(3)$  in the tensor product of two copies of its enveloping algebra. The goal of this talk is to present an algebraic description of this centraliser, pointing out along the way its similarities, and differences, with the usual Racah algebra. Then we will discuss the following fact (maybe surprising): the Weyl group of type E6 acts on the parameters of the algebra and actually forms a group of automorphisms. If time allows, we will describe an application in the study of the missing label problem for  $sl(3)$  and its symmetry. This is a joint work with Nicolas Crampé and Luc Vinet.

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