# SCHUR-WEYL DUALITY AND RACAH ALGEBRA

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Abstract: We investigate the centralizers of the direct product of three irreducible $su(2)$ representations labelled by the integers or half-integers $j_i$, $i = 1, 2, 3$. We want to describe these centralizers in terms of generators and relations. We shall offer and motivate a conjecture giving them as quotients of the Racah algebra under polynomial relations involving the generators of the latter. These quotients give the Temperley- Lieb and Brauer algebras, as expected, in the special cases $j_1 = j_2 = j_3 = 1/2$ and $j_1 = j_2 = j_3 = 1$ respectively. We shall also show that the conjecture holds for $j_1$ arbitrary and $j_2 = j_3 = 1/2$ in which case, remarkably, the centralizer is identified as a one-boundary Temperley-Lieb algebra.