1138-81-158   **Matthias Christandl** and **Burak Sahinoglu*** (`sahinoglu@caltech.edu`), 1200 E. California Blvd., MC 306-15, Pasadena, CA 91125, and **Michael Walter**. *Recoupling coefficients and quantum entropies.*

We prove that the asymptotic behavior of the recoupling coefficients of the symmetric group is characterized by a quantum marginal problem – namely, by the existence of quantum states of three particles with given eigenvalues for their reduced density operators. This generalizes Wigner's observation that the semiclassical behavior of the 6j-symbols for SU(2) – fundamental to the quantum theory of angular momentum – is governed by the existence of Euclidean tetrahedra. As a corollary, we deduce solely from symmetry considerations the strong subadditivity property of the von Neumann entropy. Lastly, we show that the problem of characterizing the eigenvalues of partial sums of Hermitian matrices arises as a special case of the quantum marginal problem. We establish a corresponding relation between the recoupling coefficients of the unitary and symmetric groups, generalizing a classical result of Littlewood and Murnaghan. (Received February 08, 2018)