

**Research Highlight: Double Pieri algebras and iterated Pieri algebras
for the classical groups**

Work of Professor LEE Soo Teck

In a recent work joint with Roger Howe and Sangjib Kim, Professor Lee study iterated Pieri rules for representations of classical groups. More specifically, they consider tensor products of a general representation with multiple factors of representations corresponding to one-rowed Young diagrams (or in the case of the general linear group, also the duals of these). They define iterated Pieri algebras, whose structure encodes the irreducible decompositions of such tensor products. They show that there is a single family of algebras, which they call double Pieri algebras, and which can be used to describe the iterated Pieri algebras for all three families of classical groups. Furthermore, they show that the double Pieri algebras have flat deformations to Hibi rings on explicitly described posets. As an application, they describe the branching rules for certain unitary highest weight modules.

Reference:

R. Howe, S. Kim and S. T. Lee, Double Pieri algebras and iterated Pieri algebras for the classical groups, Amer. J. Math. 139 (2017), 347--401.