Finding an Analogue to the Forgotten Basis in the Quasisymetric Functions

Robert McCloskey

3/25/2019

In this talk, we will consider the vector space of symmetric functions, Sym, and its generalization to the quasisymmetric functions (QSym) and the noncommutative symmetric functions (NSym). In particular, we will discuss the bases of Sym. We then describe an involution on Sym, as well as define an inner product (on Sym^2) to give us some intuition as to how the bases of Sym are related to one another. In generalizing Sym to the spaces QSym and NSym, we will attempt to find and describe analogues to all of the objects well understood in Sym, one of which is not yet defined in QSym.