Combinatorics and Cluster Expansions

William Faris
University of Arizona

This talk will survey recent progress on clarifying the connection between enumerative combinatorics and cluster expansions. The combinatorics side concerns species of combinatorial structures and the associated exponential generating functions. Cluster expansions, on the other hand, are supposed to give convergent expressions for measures on infinite dimensional spaces, such as those that occur in statistical mechanics. There is a kind of dictionary between these two subjects that sheds light on each of them. In particular, it gives insight into new convergence results for cluster expansions.