1145-05-188 **Stephen Melczer*** (`smelczer@sas.upenn.edu`). *Asymptotic regime change for multivariate generating functions.*

The study of multivariate generating functions comprises the domain of Analytic Combinatorics in Several Variables (ACSV). Analogously to the univariate case, the techniques of ACSV show how the singularities of a (typically rational) multivariate generating function dictate asymptotics of its coefficients. Unlike the univariate case, however, a multivariate generating function encodes a wealth of sequences. In particular, one can fix a direction vector $\mathbf{r} = (r_1, \ldots, r_d) \in \mathbb{R}_{>0}^d$ and examine asymptotics of the coefficient sequence $f_{nr_1, \ldots, nr_d}$ as n approaches infinity. Although this definition is a priori only non-trivial when $\mathbf{r}$ contains rational entries, the techniques of ACSV show asymptotics typically vary in a uniformly predictable way as $\mathbf{r}$ varies smoothly, meaning asymptotics can be defined in a limit sense for "generic" directions $\mathbf{r} \in \mathbb{R}_{>0}^d$. In this talk we discuss the first uniform study of non-generic directions, around which asymptotics sharply transition, and study how this transition between different regimes occurs.

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1