

1173-11-219 **Larry Rolen*** (larry.rolen@vanderbilt.edu), Nashville, TN 37240. *Recent problems in partitions and other combinatorial functions.*

In this talk, I will summarize some recent work with a number of collaborators on conjectured analytic and combinatorial properties of partitions and related functions. In particular, I will look at recent conjectures of Stanton, which ultimately aim to give a deeper understanding into the workings of the rank and crank functions in explaining Ramanujan's congruences, as well as recent progress in producing such functions explaining congruences for combinatorial functions using Gritsenko-Skoruppa-Zagier's theory of theta blocks (special products built out of Dedekind eta and Jacobi theta functions with ties to Lie theory). I will also discuss how analytic questions about partitions can be used to study Stanton's conjectures, as well as recent conjectures of Chern-Fu-Tang and Heim-Neuhauser, which are related to the Nekrasov-Okounkov formula. (Received September 20, 2021)