

1067-AA-1292 **Amanda Folsom*** (amanda.folsom@yale.edu), Yale University, Mathematics Department, P.O. Box 208283, New Haven, CT 06520-8283. *Special functions and modular forms in number theory.*

In this talk we will emphasize the interplay and relationships between special functions and modular forms in number theory. Modular forms, which, loosely speaking, are complex analytic functions equipped with certain symmetries, have been central to many notable problems, including Fermat's Last Theorem, and the Riemann Hypothesis. Historically, there are many famous examples relating modular forms to basic hypergeometric series (or q-hypergeometric series), which are particular special functions, however the precise interplay between the two remains a mystery. Special functions also appear in formulas describing the Fourier coefficients of modular forms, which are intrinsically rich with information. Designed for an undergraduate audience, this talk will introduce these aspects of special functions, noting new developments in the area of "mock modular forms", and fundamental applications to the theory of integer partitions, both old and new. (Received September 20, 2010)