1112-81-3 **Andrew Neitzke*** (neitzke@math.utexas.edu), The University of Texas at Austin, Austin, TX.

Some new geometric applications of quantum field theory.

Supersymmetric quantum field theory has had considerable impact in geometry and topology over the last few decades, One of the main focal points was Seiberg and Witten's analysis of the low-energy behavior of $N = 2$ supersymmetric Yang-Mills theory in four dimensions, which led to significant progress in four-manifold topology. Recently it has been discovered that the very same field theories that Seiberg and Witten studied are also connected to Teichmüller theory, and lead to new constructions there. In this talk I will describe one such construction, which is completely concrete and geometric: it relates the trajectories of quadratic differentials (solutions of a certain differential equation in one variable) to a Hilbert space of supersymmetric particle states, and from there to various other things, including a new attach on the old problem of producing explicit solutions to Einstein's equations (Ricci-flat metrics). The work I will report is joint with Davide Gaiotto and Greg Moore, and builds on work of many others, especially Seiberg-Witten, Kontsevich-Soibelman, Joyce-Song, Fock-Goncharov, Hitchin, Lerche-Mayr-Vafa-Warner. (Received May 02, 2014)