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**Jacques Distler\***, Physics Department, University of Texas at Austin, 2515 Speedway, MS C1600, Austin, TX 78712.  *$\mathcal{N} = 2$  SCFTs, Tinkertoys and Representation Theory.*

I will give a brief introduction to a very interesting class of  $d = 4$ ,  $\mathcal{N} = 2$  superconformal quantum field theories. These theories come in families, parametrized by  $\mathcal{M}_{g,n}$ , the moduli space of genus- $g$  curves with  $n$  punctures. The data to specify such a theory is (1) a choice of compact Lie algebra,  $\mathfrak{j}$ , of ADE type, (2) a closed Riemann surface,  $C$ , with  $n$  punctures and (3) a decoration at each puncture, labeled by a nilpotent orbit in  $\mathfrak{j}_C$ . Many of the properties of the quantum field theory are encoded directly by this data. For instance, the low-energy dynamics on the “Coulomb branch” of the theory is determined by a complex integrable system – a parabolic Hitchin system on  $C$ , where the Higgs field has simple poles, with nilpotent residues, at the punctures. If I have time, I will discuss one application, to hyperKähler quotients of instanton moduli spaces.

In a companion talk, Andy Trimm will introduce the Superconformal Index for these theories, a generating function with very interesting representation-theoretic properties. (Received September 20, 2014)