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Compactifying 5d superconformal field theories to 3d

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The study of the strong coupling behavior of quantum field theory is very challenging, with theories exhibiting interesting and mysterious strong coupling phenomena like dualities and symmetry enhancement. The tool of dimensional reduction, where the theories are realized through the compactification of a higher dimensional theory, can be used to give an organizing principle for these phenomena. In this talk I will describe the recent progress in the study of such relations between five dimensional SCFTs and three dimensional $\mathcal{N} = 2$ theories. Specifically, I consider the compactification of the so-called rank 1 Seiberg E_{N_f+1} 5d SCFTs on tori and tubes with flux in their global symmetry, formulate a conjecture for the resulting 3d theories and put them to various consistency checks. This leads to many new and interesting cases of peculiar strong coupling behavior of 3d supersymmetric field theories like symmetry enhancement.

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