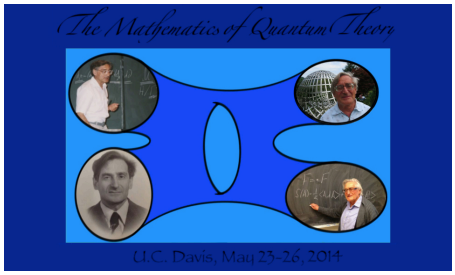

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A hyperholomorphic line bundle in

cal N=2$theories$

Sunday 25 May 2014 14:45 (45 minutes)

Compactifying $calN = 2$ supersymmetric field theory from four to three dimensions on a circle gives rise to a complex integrable system carrying a hyperkahler metric. In many cases this integrable system carries in addition a canonical hyperholomorphic line bundle, conjecturally related to the physics of the theory compactified on Taub-NUT space. I will describe the construction of this line bundle, its connection to complex Chern-Simons theory, and a closely related new smooth generating function for BPS state counts / Donaldson-Thomas invariants. The bundle in some cases coincides with one introduced by Haydys and Alexandrov-Persson-Pioline.

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