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Ryan E. Grady* (rgrady@nd.edu), 255 Hurley Hall, Notre Dame, IN 46628. *Chern-Simons Theory and the Todd Genus*. Preliminary report.

Building on work of Costello, we show how the Todd genus of a manifold X arises in the rigorous analysis of a certain one dimensional perturbative field theory with target X . A key step in this one dimensional Chern-Simons theory is encoding the geometry of the manifold X as an L_∞ -algebra. (Received September 14, 2010)