BOSTON UNIVERSITY GEOMETRY AND PHYSICS SEMINAR

ALGEBRAIC STRUCTURE OF tt* EQUATIONS FOR CALABI-YAU SIGMA MODELS

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Math/Computer Science, Room148
111 Cummington Street, Boston

Tea: 3:45pm in Room MCS 144

Abstract: The tt* equations define a flat connection on the moduli spaces of 2d, N=2 quantum field theories. For conformal theories with c=3d, which can be realized as non-linear sigma models into Calabi-Yau d-folds, this flat connection is equivalent to special geometry for threefolds and to its analogs in other dimensions. I will show that the non-holomorphic content of the tt* equations in the cases d=1,2,3 is captured in terms of finitely many generators of special functions, which close under derivatives. The generators are understood as coordinates on a larger moduli space. This space parameterizes a freedom in choosing forms on the CY respecting the Hodge filtration and having a constant pairing. Linear combinations of vector fields on that space are identified with generators of a Lie algebra. This Lie algebra replaces the anti-holomorphic derivatives of tt* and provides these with a finer and algebraic meaning. The generators of the differential rings of special functions are given by quasi-modular forms for d=1 and their generalizations in d=2,3.

See `http://math.bu.edu/research/geom/seminar.html` or contact Ryan Grady *regrady@math.bu.edu* for more information.