BOSTON UNIVERSITY SPECIAL GEOMETRY SEMINAR

HODGE NUMBERS OF LANDAU-GINZBURG MODELS

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January 16, 2018, 4:00 – 5:00pm
Math/Computer Science, Room B21
111 Cummington Street, Boston

Tea: 3:30pm in Room B21

Abstract: To a given Calabi-Yau manifold of dimension d, mirror symmetry predicts that there is a mirror dual Calabi-Yau manifold of dimension d whose numerical invariants, called its Hodge numbers, reflect the Hodge numbers of the original Calabi-Yau manifold. This has interesting implications regarding the classification of Calabi-Yau manifolds – an important problem in algebraic geometry. Mirror symmetry also predicts that to any Fano manifold, there is a mirror Landau-Ginzburg model, that is, a pair (Y, w) where Y is a complex manifold and w is a holomorphic function on Y. Recently, Katzarkov, Kontsevich and Pantev defined two sets of numerical invariants associated to Landau-Ginzburg models which take the place of Hodge numbers. They conjecture that if (Y, w) is mirror dual to a Fano manifold, then these sets of invariants are equal to each other and that they reflect the Hodge numbers of the original Fano manifold. I will survey some recent results describing how to compute these two sets of invariants, give criteria for when they are equal, and how this can be used to confirm the conjectures of Katzarkov, Kontsevich and Pantev in several examples. These criteria constrain the class of Landau-Ginzburg models which may be mirror to Fano manifolds, and hence could help provide insight into the classification of Fano manifolds.

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