

ATELIER : « LES COURBES J -HOLOMORPHES EN GÉOMÉTRIE SYMPLECTIQUE, TOPOLOGIE ET DYNAMIQUE »
29 AVRIL - 10 MAI, 2013

WORKSHOP: “ J -HOLOMORPHIC CURVES IN SYMPLECTIC GEOMETRY, TOPOLOGY AND DYNAMICS”
APRIL 29 - MAY 10, 2013

Refined homological mirror symmetry conjectures

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I'll formulate precise HMS conjectures in the context of Gross-Siebert's toric degenerations of Calabi–Yau manifolds, and comment on joint work with Lekili which proves them in dimension 1. These conjectures refine Kontsevich's HMS conjecture in a number of ways. First, I work with a Fukaya category relative to a divisor which can be defined rigorously without virtual transversality theory, and which is defined over a ring of divided power series in one variable. The relative category carries information not present in the harder-to-define absolute Fukaya category. Part of the extra information corresponds to the choice of a degenerate central fibre on the mirror side, and part of it is an arithmetic refinement of the coefficients. I distinguish the perfect and bounded-coherent derived categories of the mirror, matching them to compact and wrapped Lagrangians; and I propose how various structures should match up under mirror symmetry. My hope is that by prescribing a cogent Ansatz for HMS, based on relatively simple forms of Floer theory, HMS will become more amenable to proof.

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