Title: An invariant for Calabi-Yau manifolds through analytic torsion.

Abstract:
String theorists have predicted the existence of an invariant constructed through analytic torsion for Calabi-Yau manifolds, which should, unlike the analytic torsions themselves, only depend on the complex structure. The construction should, by mirror symmetry principles, be a birational invariant and count genus 1 curves on a Calabi-Yau ‘mirror’. The construction of the invariant was done by Fang-Lu-Yoshikawa in dimension 3, and in this talk, we generalize the construction to higher dimensions. A key feature is that we can control, topologically, the asymptotic behavior of the invariant along 1-parameter degenerations. If time permits I will discuss the possibility to extend the BCOV invariant in degenerating families of complex Calabi-Yau manifolds degenerating to the Berkovich space defined by the degeneration. This is joint work with Gerard Freixas and Christophe Mourougane.