Smooth asymptotics for collapsing Calabi-Yau metrics
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I will present joint work with Valentino Tosatti in which we obtain an asymptotic expansion (locally uniformly away from the singular fibers) of Calabi-Yau metrics collapsing along a holomorphic fibration of a fixed compact Calabi-Yau manifold. The result is weaker than a standard asymptotic expansion in that the individual terms and their decay rates are not known precisely. However, it is far stronger in that all terms are proved to be uniformly bounded in weighted C^k norms for all k, and the bounds only depend on an a priori C^0 bound for the collapsing metric. We also calculate the first nontrivial term in terms of the Kodaira-Spencer forms of the fibration.