Title: Abundance of singular points for almost minimizing currents

Abstract: Often in the calculus of variations if the minimizers to a certain functional have very nice regularity, then some kind of "almost minimizers" of the functional inherit the majority of this regularity. For example, sets of locally finite perimeter in $\mathbb{R}^{m+1}$ whose boundary locally minimize area are known to be analytic manifolds outside a singular set of dimension at most $m-7$. In the mid '80s Taminini showed that area almost minimizing sets of finite perimeter are $C^{1,\alpha}$-manifolds outside a singular set also of dimension at most $m-7$. In contrast, in the setting of currents, strong regularity outside a small singular set is known for area minimizing currents. However, the best results, due to Almgren and Bombieri, only demonstrate that the singular set of almost minimizing currents has an empty interior. In this talk we show that this is actually the strongest regularity result for almost minimizing currents possible. We do this by constructing currents in codimension 1 which are almost minimizing in the sense of Almgren and Bombieri whose singular set contains any prescribed closed set with empty interior. We also construct 2-dimensional currents in $\mathbb{R}^4$ with branching singularities that contain any prescribed closed set with empty interior. This is joint work with Anna Skorobogatova.