MATH+ Spotlight Talk
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Can We Use Computers to Find Canonical Riemannian Metrics?

Abstract:

In the first part of the talk I will describe the central objects of my research, Calabi-Yau manifolds and G2-manifolds, in accessible terms. As solutions to the vacuum Einstein equations, these types of Riemannian manifolds are particularly interesting in geometry as they provide canonical geometric structures on a given manifold. Then I will review what we know about their existence. In the last part of the talk I will describe ongoing work which aims to provide computer assisted proofs, for example by using neural networks, for the existence of some Calabi-Yau metrics.