Families of solutions of the heterotic G2 system

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Abstract:

The heterotic G2 system is the 7-dimensional analogue of the Hull-Strominger system. Solutions to this system describe compactifications of heterotic string theory with N=1 supersymmetry on a 7-dimensional manifold. From a mathematical perspective, these solutions involve interesting constructions in geometry such as integrable G2-structures and G2-instantons. Unfortunately, finding explicit solutions to the system is a challenging problem due to the existence of an anomaly cancellation condition for the gauge fields. In this talk I will introduce the heterotic G2 system and show how to construct families of solutions using homogeneous 3-Sasakian manifolds with squashed metrics. This talk is based on joint work with Xenia de la Ossa, arXiv:2111.13221.