THE UNIVERSITY  OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

GEOMETRY SEMINAR

G_2 manifolds and G_2 conifolds

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Abstract

The exceptional properties of the octonion algebra allow us to define the notion of a G_2 structure on an oriented spin 7-manifold, which is a certain "nondegenerate" 3-form that induces a Riemannian metric in a nonlinear way. The manifold is called a G_2 manifold if the 3-form is parallel. Such manifolds are always Ricci-flat, and are of interest in physics. More recently, however, there has been interest in G_2 "conifolds", which have a finite number of isolated "cone-like" singularities. We will begin with an introduction to G_2 manifolds for a general audience, paying particular attention to the similarities and differences of G_2 geometry with respect to the geometries of Kähler manifolds and of 3-manifolds. Then we will define G_2 conifolds, and discuss some results about them, including their desingularization and their deformation theory. If time permits, we will speculate on possible constructions of G_2 conifolds.

Date:	December 20, 2012 (Thursday)
Time:	3:00 – 4:00pm
Place:	Room 210, Run Run Shaw Bldg., HKU

All are welcome