Pure Mathematics Seminar

Quaternionic and octonionic geometry

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One of the big problems in differential geometry is to obtain an analog of the Calabi-Yau theorem for 7-dimensional G_2-manifolds. Due to the close relationship between the group G_2 and the octonions, one possible approach is to reformulate all the relevant geometric and algebraic objects in terms of octonions and develop an octonionic theory that would mirror the complex Kähler geometry. This is currently an ongoing joint project with Shing-Tung Yau. As a simpler example we will first consider quaternionic algebraic and geometric properties on 3-dimensional manifolds. In particular we will consider quaternion-valued tensors and their decompositions. This is part of an ongoing project with Spiro Karigiannis. We will then show how a similar approach carries over to the octonionic case on 7-dimensional manifolds.

Date: **Friday, February 5, 2016**
Time: **3:00 pm**
Place: **Edinburg:** MAGC 1.302, **Brownsville:** UBLB 2.206

The talk will delivered live at the *Brownsville* campus and will be streamed to the Edinburg campus

Coffee and cookies will be served.

For further information or for special accommodations, please contact Dr. Sergey Grigorian via email at [sergey.grigorian@utrgv.edu], or Dr. Alexey Garber at [alexey.garber@utrgv.edu]