Seminar: "Geometry&Physics@DFT"

Location: seminar room DFT (IFIN-HH),
(http://events.theory.nipne.ro/gap/index.php/seminar)
(http://www.nipne.ro/indico/categoryDisplay.py?categId=5)

Date: Friday, January 30, 2015, 11:00 a.m.

Title: **Foliated eight-manifolds for M-theory compactification**

Speaker: **Dr. Calin Lazaroiu**
(IBS, Center for Geometry and Physics & IFIN-HH, DFT)

Abstract: "We characterize compact eight-manifolds M which arise as internal spaces in N=1 flux compactifications of M-theory down to AdS3 using the theory of foliations, for the case when the internal part of the supersymmetry generator is everywhere non-chiral. We prove that specifying such a supersymmetric background is equivalent with giving a codimension one foliation of M which carries a leafwise G2 structure, such that the O'Neill-Gray tensors, non-adapted part of the normal connection and torsion classes of the G2 structure are given in terms of the supergravity four-form field strength by explicit formulas which we derive. We discuss the topology of such foliations, showing that the C^* algebra of the foliation is a noncommutative torus of dimension given by the irrationality rank of a certain cohomology class constructed from the four-form field strength, which must satisfy the Latour obstruction. We also give a criterion in terms of this class for when such foliations are fibrations over the circle. When the criterion is not satisfied, each leaf of the foliation is dense in M. I also briefly discuss the general case, in which one finds a singular foliation in the sense of Haefliger."