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FAKULTÄT FÜR MATHEMATIK

Dekan:

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Einladung zur öffentlichen Defensio von

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Thema der Dissertation:

**Weyl structures for generic rank two distributions in
dimension five**

Abstract:

The study of generic rank two distributions in dimension five is a classic subject: It is related to the first appearance of the exceptional Lie group G_2 and the development of the equivalence method by Elie Cartan. We shall discuss some background and present new results about these distributions, using concepts from the theory of parabolic geometries. In particular, we consider Weyl structures determined by so-called generalized contact forms and provide an explicit description of the corresponding linear connection on the distribution, the corresponding decomposition of the tangent bundle and the corresponding Rho-tensor. This can be interpreted as a construction of the canonical Cartan connection for a generic rank two distribution in dimension five. The approach leads to formulae for invariants of the distribution, such as the fundamental curvature tensor and certain invariant operators, in terms of generalized contact forms. Furthermore, we discuss Nurowski's conformal structure as a special case of a generalized Fefferman construction. Using our results, we obtain a natural description of a metric from Nurowski's conformal class.

Prüfungssenat:

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Zeit: Donnerstag, 20. November 2008, 15:30 Uhr

Ort: Fakultät für Mathematik, Seminarraum 2A310, Geozentrum UZA II, Althanstr. 14