Generic rank 2 distributions in dimension 5 and associated conformal structures

Katja Sagerschnig (Univ. Wien)

Let M be a 5-manifold and let $\mathscr{H} \subset TM$ be a maximally non-integrable 2-distribution, i.e. a rank 2 subbundle such that for each $x \in M$ values of Lie brackets of at most three sections of $\mathscr{H}$ span the tangent space $T_x M$. These distributions have been studied in E. Cartan's classical "five variables paper", where he showed that they admit an equivalent description as certain Cartan geometries. Following Cartan's work, P. Nurowski discovered that to such a distribution there is a canonically associated conformal class of signature $(2,3)$-metrics on M. The aim of this talk is to demonstrate that tools from the theory of parabolic geometries can be employed to derive new results about the distributions and the associated conformal structures. Some of these results were obtained in joint work with A. Cap respectively M. Hammerl.