

Nijenhuis Geometry

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The aim of the talk is to discuss new developments in Nijenhuis Geometry (joint research project with A.Konyaev (Moscow) and V.Matveev (Jena)). Similar to Riemannian, Poisson or symplectic geometry, the Nijenhuis geometric structure is defined by means of a tensor of order 2 (i.e., by a matrix) but, in contrast to the above examples, this tensor is not a bilinear form but linear operator. The additional geometric condition imposed on this operator is that its Nijenhuis torsion identically vanishes.

Open problems in this area include studying singular points of Nijenhuis operators, local normal forms, global properties and topological obstructions to the existence of such operators on closed manifolds. I intend to demonstrate that this research programme is realistic by presenting a series of new, not at all obvious, results.