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Abstracts of Short Communications and Posters

Section:

7. Lie Groups and Lie Algebras

1991 MS Classification: 17, 22
Burde, Dietrich, University of Düsseldorf
Affine and projective structures on Lie groups
This talk presents a conjecture in the theory of affinely and projectively flat manifolds. In 1977 J. Milnor asked: *Does every solvable Lie group G admit a complete left-invariant affine structure ?* The question became a famous conjecture. It was disproved recently by Benoist and by Grunewald and the author. There are filiform nilpotent Lie groups without any left-invariant affine structure. The only known examples are of dimension 10 and 11. To prove this a refinement of *Ado's Theorem* for Lie algebras is needed. A positive result holds for classes of filiform Lie groups of dimension $n \geq 12$ which corresponds to certain irreducible components of the variety of nilpotent Lie algebras.
Reference: D. Burde: Affine structures on nilmanifolds, *Int. J. of Math.* **7** (1996), 599-616.