

NONASSOCIATIVE STRUCTURES AND 3-SASAKIAN HOMOGENEOUS MANIFOLDS

Cristina Draper Fontanals

Universidad de Málaga, Spain
cdf@uma.es

The 3-Sasakian homogeneous spaces are certain contact manifolds whose geometric structure is very well codified in Lie theoretical terms. This fact can be used to find interesting invariant affine connections, with nice properties or special holonomies. The more fruitful results arise in the particular case of the 7-dimensional 3-Sasakian homogeneous manifolds, that is, the corresponding sphere and the Aloff-Wallach space, although the target is to find a good connection independently of the dimension.

A nonassociative structure related to Lie algebras appears through this study, that one of symplectic triple system. In particular the curvature of an affine connection can be written by means of the binary and ternary products in this triple system. Also, for some distinguished connections, the holonomy algebra can be described in a unified form, what helps to find a suitable candidate for a *best affine connection adapted to the geometry* of the 3-Sasakian manifold, which necessarily will have nonzero torsion.

REFERENCES:

1. Draper C., Ortega M. and Palomo F.J., *Affine Connections on 3-Sasakian Homogeneous Manifolds*, Preprint arXiv:1801.10526v2. To appear in Math Z.