Holonomy groups of Lorentz-Kähler manifolds

Anton Galaev

Faculty of Science, University of Hradec Králové, Hradec Králové, Czech Republic

The holonomy group of a pseudo-Riemannian manifold (M, g) is an important invariant that gives rich information about the geometry of (M, g). This motivates the classification problem for holonomy groups of pseudo-Riemannian manifolds. The problem is solved only for connected holonomy groups of Riemannian and Lorentzian manifolds [1]. We obtain the classification of the connected holonomy groups for pseudo-Kählerian manifolds of complex index one [2]. In particular, we construct metrics with each possible connected holonomy group by giving their pseudo-Kählerian potential.

References

[1] Galaev, A., Leistner, Th. Recent developments in pseudo-Riemannian holonomy theory. Handbook of pseudo-Riemannian geometry and supersymmetry, 581–627, IRMA Lect. Math. Theor. Phys., 16, Eur. Math. Soc., Zürich, 2010.

[2] Galaev, A.S. Holonomy classification of Lorentz-Kähler manifolds. arXiv:1606.07701.