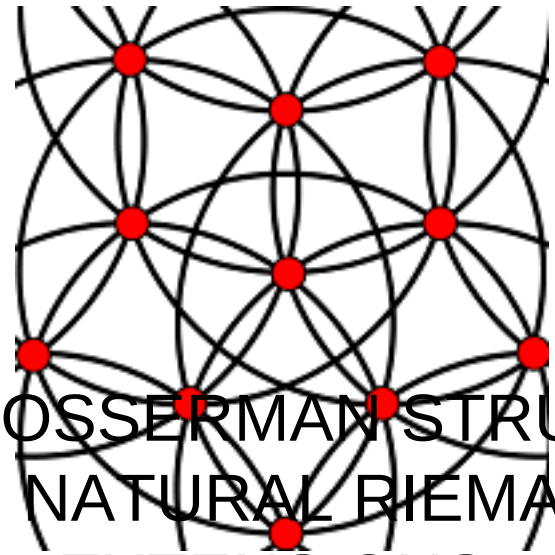
CSASC 2013



Contribution ID : 34

ALMOST OSSERMAN STRUCTURES ON NATURAL RIEMANN EXTENSIONS.

Content :

Abstract.
In this lecture we study natural Einstein Riemann extensions from torsion-free affine manifolds to their cotangent bundles. Such a Riemann extension is always a semi-Riemannian manifold of signature (n, n). It is well-known that, if the base manifold is a torsion-less affine two-manifold with skew-symmetric Ricci tensor, or, a flat affine space, we obtain a (globally) Osserman structure on T*M. If the new base manifold is an arbitrary direct product of the simple affine manifolds mentioned above, we found that the resulting structures on T*M are not Osserman but only "almost Osserman", in the sense that the Jacobi operator has to be restricted from the whole set of unit space-like vectors (or unit time-like vectors, respectively) to a complement of a subset of measure zero. We also find that the characteristic polynomial of the (restricted) Jacobi operator in the cotangent bundle depends only on the full dimension n of the base manifold, and it is the same as for the flat affine space This is a joint research with Masami Sekizawa, Tokyo Gakugei University.

References:
1) Eduardo García-Río, Demir N. Kupeli, Ramón Vásquez –Lorenzo, Osserman Manifolds in Semi-Riemannian Geometry, Lecture Notes in Mathematics, volume 1777, Springer 2002.
2) O. Kowalski, M. Sekizawa, On natural Riemann extensions, Publ. Math. Debrecen, 78, 3-4 (2011), 709-721.
3) O. Kowalski, M. Sekizawa, Almost Osserman structures on natural Riemann extensions, Diff.Geom. Appl.31(2013), 140-149

Primary authors : Prof. KOWALSKI, Oldrich (Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic)

Co-authors : Prof. SEKIZAWA, Masami (Tokyo Gakugei University)

Presenter : Prof. KOWALSKI, Oldrich (Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic)

Session classification : --not yet classified--

Track classification : Diferential Geometry and Mathematical Physics

Type : Oral presentation