

DUALITY PRINCIPLE IN OSSERMAN MANIFOLDS

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ABSTRACT.

Let (M, g) be a pseudo-Riemannian manifold, with curvature tensor R . The Jacobi operator R_X is the symmetric endomorphism of $T_p M$ defined by $R_X(Y) = R(Y, X)X$. In Riemannian settings, if M is locally a rank-one symmetric space or if M is flat, then the eigenvalues of R_X are constant on SM . Osserman wondered if the converse held; this question is usually known as the *Osserman conjecture*.

In the last two decades, many authors have been studied problems arising from the Osserman conjecture and its generalizations. In the first part of the lecture we will give an overview of Osserman type problems in the pseudo-Riemannian geometry. The second part of the lecture is devoted to some generalizations of duality principle and the equivalence of duality principle and Osserman pointwise condition. This part of the lecture consists the new results, which are obtained in collaboration with Yury Nikolayevsky and Vladica Andrejić.

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