

RICCI-LIKE SOLITONS ON ALMOST CONTACT B-METRIC MANIFOLDS: A REVIEW

Mancho Manev

Abstract. *An overview of five papers by the author from the last two years on the topic has been made. Ricci-like solitons are introduced and studied on almost contact B-metric manifolds (also known as almost contact complex Riemannian manifolds) in the cases when the soliton's potential is the Reeb vector field, vertical or arbitrary vector field. The cases of Sasaki-like manifolds and torse-forming potentials have been considered. In these cases, necessary and sufficient conditions are proved these manifolds are (almost) Einstein-like. Explicit examples of Lie groups as 3- and 5-dimensional manifolds with the structures studied are provided. Some generalizations of these solitons are considered: almost Ricci-like solitons and gradient almost Ricci-like solitons.*

Key words: Ricci-like soliton, η -Ricci soliton, Einstein-like manifold, η -Einstein manifold, almost contact B-metric manifold, almost contact complex Riemannian manifold, torse-forming vector field.

Mathematics Subject Classification: 53C25, 53D15, 53C50, 53C44, 53D35, 70G45

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Mancho Manev^{1,*}

¹ Paisii Hilendarski University of Plovdiv,
Faculty of Mathematics and Informatics,
236 Bulgaria Blvd., 4003 Plovdiv, Bulgaria

*Corresponding author: mmanev@uni-plovdiv.bg

