Results on $*$-Ricci solitons

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Abstract

Motivated by Tachibana, who in [1] introduced the notion of $*$-Ricci tensor on almost Hermitian manifolds, in [2] Hamada defined the $*$-Ricci tensor of real hypersurfaces in non-flat complex space forms by

$$g(S*X,Y) = \frac{1}{2}(\mathrm{trace}\{\phi \circ R(X,Y)\}), \quad X,Y \in TM.$$

The $*$-scalar curvature is denoted by $\rho*$ and is defined to be the trace of $S*$. If $\rho*$ is constant and M a real hypersurface in a non-flat complex space form satisfies the relation $g(S*X,Y) = \rho*2(n-1)g(X,Y)$, for all X,Y orthogonal to ξ , then M is called $*$-Einstein. In [3] G. Kaimakamis and K. Panagiotidou introduced the following definition:

A Riemannian metric g on M is called $*$-Ricci soliton, if

$$\frac{1}{2}L_V g + \mathrm{Ric}* - \lambda g = 0,$$

where $\mathrm{Ric}*(X,Y) = g(S*X,Y)$ with $S*$ being the $*$-Ricci tensor on M and λ is a constant. Recent results concerning $*$-Ricci solitons will be presented in this short talk.

References

[1] S. Tachibana, On almost-analytic vectors in almost Kählerian manifolds, Tohoku Math. J. 11 (1959) 247–265.

[2] T. Hamada, Real hypersurfaces of complex space forms in terms of Ricci $*$-tensor, Tokyo J. Math. 25 (2002) 473–483.

[3] G. Kaimakamis, K Panagiotidou, $*$-Ricci solitons of real hypersurfaces in non-flat complex space forms, J. Geom. Phys. 86 (2014) 408–413.