RIGIDITY OF COMPLETE GRADIENT STEADY RICCI SOLITONS WITH HARMONIC WEYL CURVATURE

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Abstract: In this talk, we shall present a recent rigidity result on complete noncompact gradient steady Ricci solitons with harmonic Weyl tensor. More precisely, we prove that an n-dimensional ($n\geq 5$) complete noncompact gradient steady Ricci soliton with harmonic Weyl tensor is either Ricci flat or isometric to the Bryant soliton up to scaling. Meanwhile, for $n\ge 5$, we provide a local structure theorem for n-dimensional connected (not necessarily complete) gradient Ricci solitons with harmonic Weyl curvature, thus extending the work of Kim for $n=4$.