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Ovidiu Munteanu* (ovidiu.munteanu@uconn.edu), Department of Mathematics, 196 Auditorium Rd, U-3009, Storrs, Connecticut 06269-3009, Storrs, CT 06268. *Ricci solitons*.

I will survey some recent development in the study of shrinking Ricci solitons. These are some generalizations of Einstein manifolds, and have proved to be very important for the study of the Ricci flow. They are classified in dimension two and three, but much less is understood in higher dimension. We will present some new results in dimension four, which show that the behavior of scalar curvature controls the geometry of the manifold. For example, we show that if the scalar curvature is bounded, then so is the Riemann curvature operator, and furthermore the curvature must be asymptotically non-negative, with an explicit decay rate at infinity. Furthermore, if the scalar curvature converges to zero at infinity, then the soliton must be asymptotically conical. Some extensions to arbitrary dimension can be obtained as well. This is joint with Jiaping Wang. (Received June 24, 2015)