# Rigidity of four-dimensional Kähler-Ricci solitons

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In this talk, we discuss 4-dimensional complete (not necessarily compact) gradient shrinking Ricci solitons close to a Kähler model. The first theorem could be considered as a rigidity result for the Kähler-Ricci soliton structure on $\mathbb{S}^2 \times \mathbb{R}^2$. Moreover, we will show that if the quotient of norm of the self-dual part of the Weyl tensor and scalar curvature is close to that on a Kähler metric in a specific sense, then the gradient Ricci soliton must be either half- conformally flat or locally Kähler. This is a joint work with Xiaodong Cao and Hung Tran.