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Deformation of Fano Manifolds

In this talk, we shall present a new necessary and sufficient condition on the existence of Kahler-Einstein (KE) metrics on small deformations of a Fano KE manifold with nontrivial automorphism group. If time permits, we will also describe a canonical extension of pluri-anticanonical forms from a Fano KE manifold to its small deformations which leads to a simultaneous embedding of a family of Fano manifolds into projective spaces with effective control. This is a joint work with Xiaofeng Sun, S.-T. Yau and Yingying Zhang.