On the Futaki invariant of a projective variety

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Abstract

Let M be a compact Kahler manifold with positive first Chern class. The Futaki invariant is a Lie algebra character on the space of holomorphic vector fields whose vanishing is necessary (but not sufficient) condition for the existence of a Kahler-Einstein metric. The definition of the Futaki invariant was extended to the case of Fano normal varieties by Ding and Tian, and Tian later conjectured a necessary and sufficent condition for the existence of a KE metric in terms of this generalized invariant. Thus the need arises for finding methods for computing these invariants. Recently Lu and Yotov have established simple formulas for the Futaki invariants of Fano normal complete intersections, which calculate them in terms of the action of the holomorphic vector fields on the defining polynomials. In this talk, I will describe some joint work with D.H. Phong, in which we generalize the formulas of Lu and Yotov to the case of an arbitrary normal varieties.