Picard Groups of Spaces of Rational Curves in Fano Manifolds

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Abstract:
Fano manifolds, e.g., low degree hypersurfaces in projective spaces, are precisely the projective manifolds whose spaces of rational curves with specified (effective) curve class "grow" as we pass to multiples of the curve class. What is the geometry of these spaces of curves, particularly as we pass to large multiples of the curve class? The key is a description of the Picard group, the canonical divisor class, and the effective and ample cones in this Picard group. I will survey older work, joint with Coskun, de Jong, Harris, and Roth, and then I will explain new joint work with Zhiyu Tian that describes the Picard group, canonical divisor and ample cones for spaces of rational curves on "most" Fano hypersurfaces.