

Higher rational and higher Du Bois singularities and applications

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In this talk, I will explore the recently emerged concepts of higher Du Bois and higher rational singularities, introduced by Musta a-Popa, M. Saito, Friedman-Laza, and their collaborators. These notions extend the classical definitions of Du Bois and rational singularities, serving as local conditions on singularities that ensure good cohomological behavior for families of projective complex algebraic varieties. Specifically, higher Du Bois singularities guarantee the preservation of Hodge numbers within a certain range, while higher rational singularities further impose partial Hodge symmetries. I will then discuss applications of these ideas to the deformation and moduli theory of Calabi-Yau n -folds.

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