

Rational pairs and thrifty resolutions

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Abstract:

We introduce an analogue of the notion of rational singularities to measure the singularities of pairs. This notion requires one to be careful about the resolutions one considers and this led us to the notion of thrifty resolution. Here "thrifty" indicates that these are resolutions that are economical and do not have unnecessary extremal divisors. We prove a few basic theorems about these new notions, a comparison theorem for push-forward sheaves, a general vanishing theorem for higher direct images, then apply these to obtain depth estimates of some associated ideal sheaves, which in turn are used to prove some important facts about dlt pairs.