Multiplier ideals and klt singularities via (derived) splittings

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Abstract

Thanks to the Direct Summand Theorem, splinter conditions have emerged as a way of studying singularities in commutative algebra and algebraic geometry. In characteristic zero, work of Kovács (2000) and Bhatt (2012) characterizes rational singularities as derived splinters. In this talk, I will present an analogous characterization of klt singularities by imposing additional conditions on the derived splinter property. This follows from a new characterization of the multiplier ideal, an object that measures the severity of the singularities of a variety. This perspective also gives rise analogous description of the test ideal in characteristic $p > 2$ as a corollary to a result of Epstein-Schwede.

Keywords: Test ideal, derived splinter, singularity.