

## **Completing perfect complexes**

**Henning Krause**

*University of Bielefeld, Germany*

This talk discusses a new method to complete a triangulated category; it is a categorical analogue of the construction of the real numbers from the rationals via equivalence classes of Cauchy sequences. We apply this to categories of perfect complexes. So the bounded derived category of finitely presented modules over a coherent ring is the completion of the category of perfect complexes. The result extends to non-affine noetherian schemes and gives rise to a direct construction of the singularity category. The parallel theory of completion for abelian categories is compatible with the completion of derived categories. An interesting aspect is the appropriate choice of triangles so that their colimits yield the triangles of the completion. We use the notion of a morphic enhancement of a triangulated category, which is based on Bernhard Keller's thesis.