Contribution ID: **102**   Type: **talk**

The singularity theorems of General Relativity and their low regularity extensions

Monday 23 September 2024 10:50 (35 minutes)

We review several recent low regularity versions of the singularity theorems of General Relativity. Following a brief recap of the classical theorems of Penrose and Hawking we focus on the analytical aspects of their proofs. In particular, we discuss focusing results for causal geodesics in the case of merely locally Lipschitz spacetime metrics and present corresponding recent extensions of the classical theorems. We also address the interrelation of these result to versions of the singularity theorems in the settings of closed cone structures due to Ettore Minguzzi and of metric measure geometry due to Fabio Cavalletti and Andrea Mondino.

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Session Classification: Session I. Chronology and causality, CTS