Contribution ID: **238** Type: **Talk in the parallel session**

On the scattering laws of bouncing universes

Monday, 5 July 2021 17:00 (30 minutes)

I will present recent developments on the geometric analysis of Einstein's field equations for spacetimes containing singularity hypersurfaces, which represent gravitational waves, shock waves, or phase interfaces. I will explain the formulation and classification of scattering laws and junction conditions at singularities, and will discuss bouncing cosmologies (big bang, big crunch). I will then apply this formalism to the resolution of the global evolution problem for the Einstein equations when two gravitational plane-symmetric waves collide and generate a cyclic spacetime. This is a research project in collaboration with B. Le Floch (ENS, Paris) and G. Veneziano (CERN, Geneva).

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Session Classification: Topological Methods, Global Existence Problems, and Spacetime Singularities

Track Classification: Early Universe: Topological methods, global existence problems, and spacetime singularities