Contribution ID: **17** Type: **not specified**

5-Linearized General Relativity in Hyperboloidal Slices

Wednesday 16 February 2022 09:52 (13 minutes)

A problem that remains unsolved in Numerical Relativity is the calculation of the waves all the way out to infinity from first principles. It may seem impossible to do this using a computer since they have only finite memory. But it turns out that by choosing an appropriate set of coordinates adapted to outgoing waves and considering the fall-off of the gravitational field as we approach infinity it is possible to do so.
In this project, the aim will be first to understand gauge fixing for the linearized Einstein Equations from the free-evolution point of view employed in mathematical and numerical relativity. The second goal will be to understand the use of compactified hyperboloidal slices to reach null infinity in the computational setting.

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