Contribution ID: **251** Type: **Talk**

Evolution of a self-gravitating spherical massless scalar field on compactified constant mean curvature hypersurfaces

Thursday 17 December 2015 17:15 (20 minutes)

I present the numerical evolution of a self-gravitating massless spherical scalar field based on a new code which implements the 3+1 tetrad formulation of general relativity on compactified constant mean curvature (CMC) hypersurfaces developed by Bardeen, Sarbach and Buchman. The major advantage of this formulation is that it allow us to model with high accuracy the scalar radiation at future null infinity, removing the need to impose artificial outer boundary conditions. As a test case of study, I explore the evolution of different initially in-going packets or shells of scalar fields and compare the results to standard results in the literature, including Choptuik's results on critical collapse.

Author: MORALES, Manuel David (Instituto de Física y Matemáticas - Universidad Michoacana de San Nicolás de Hidalgo)

Co-author: Dr SARBACH, Olivier (Instituto de Física y Matemáticas - Universidad Michoacana de San Nicolás de Hidalgo)

Presenter: MORALES, Manuel David (Instituto de Física y Matemáticas - Universidad Michoacana de San Nicolás de Hidalgo)

Session Classification: 01 - Numerical relativity