



Contribution ID : 5

Type : **not specified**

## Time-domain metric reconstruction for self-force applications

*Tuesday, 20 June 2017 11:30 (25)*

We present a new method for self-force calculation in Kerr, based on a time-domain reconstruction of the metric perturbation from curvature scalars. The approach is computationally cheaper than existing time-domain methods based on a direct integration of the linearised Einstein's equations in the Lorenz gauge. It also avoids instability issues that plague those methods. At the same time, it retains the utility and flexibility of a time-domain treatment, allowing calculations for any type of orbits (including highly eccentric or unbound ones) and the possibility of self-consistently evolving the orbit under the effect of the self-force. Here we formulate our method for Kerr, and present a first numerical implementation in Schwarzschild.

**Primary author(s)** : Prof. BARACK, Leor (University of Southampton)

**Co-author(s)** : Mr. GIUDICE, Paco (University of Southampton)

**Presenter(s)** : Prof. BARACK, Leor (University of Southampton)