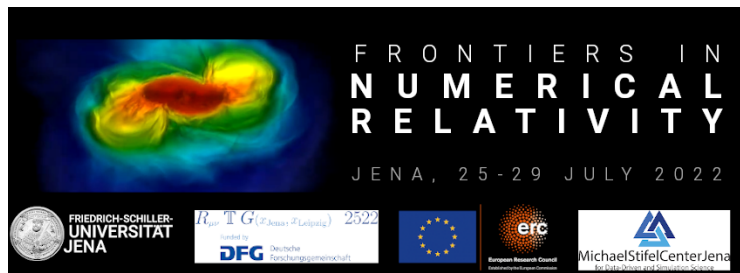


Frontiers in Numerical Relativity 2022 (FNR2022)



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Black hole binary mergers with light scalar fields: the impact of initial data.

Thursday, 28 July 2022 13:00 (15 minutes)

Scalar fields around compact objects are of interest for scalar-tensor theories of gravity and dark matter models consisting of a massive scalar, e.g. axions. These fields can form long-lived clouds around black holes via superradiance or simple gravitational accretion. Black hole binary mergers occurring inside such clouds, or in dense scalar dark matter environments, may modify the gravitational wave signal compared to the vacuum case. I will discuss our numerical relativity simulations of scalar field accretion, and binary mergers in dense scalar field environments, and the challenges we face in producing realistic templates of such “dirty” binary black hole mergers for the next generation of gravitational wave observatories. In particular I will explore the impact of the scalar field initial data.

Presenter: BAMBER, Jamie (University of Oxford)

Session Classification: Short talks