Self-force with numerical relativity tools
IAN VEGA, University of Guelph, PETER DIENER, Louisiana State University, WOLFGANG TICHY, Florida Atlantic University, STEVE DETWEILER, University of Florida — We review recent progress towards developing an approach to self-force problems that take advantage of extant infrastructure within numerical relativity. We shall describe our prescription and its application to the case of a scalar charge in a circular orbit around a Schwarzschild black hole with the use of two evolution codes originally written for numerical relativity applications. Within this framework, the self-force on the charge and the corresponding energy fluxes are computed to within 1% of the known correct answer. This constitutes the first successful calculation of a self-force in a (3+1) setting.