Abstract Submitted
for the APR20 Meeting of
The American Physical Society

Post-Newtonian Dynamics of Black Hole Binaries in Einstein-Scalar-Gauss-Bonnet Gravity FELIX-LOUIS JULIE, EMANUELE BERTI, Johns Hopkins University — We study the post-Newtonian dynamics of binary black holes in Einstein-scalar-Gauss-Bonnet gravity theories. To this aim we build static, spherically symmetric black hole solutions at high order in the Gauss-Bonnet coupling. We then reduce these solutions to point particles with scalar field-dependent masses, showing that this procedure amounts to fixing the Wald entropy of the black holes during their slow inspiral. We compute the two-body Lagrangian at first post-Newtonian order and show that no regularization procedure is needed to obtain the Gauss-Bonnet contributions to the fields, which are finite. Finally, we illustrate the power of our approach by Padé-resumming the so-called sensitivities, which measure the bodies couplings to the scalar field, for some specific theories of interest. [Presentation based on Phys.Rev. D100 (2019) no.10, 104061]

Felix Julie
Johns Hopkins University

Date submitted: 10 Jan 2020 Electronic form version 1.4