Abstract Submitted
for the APR11 Meeting of
The American Physical Society

Perturbative, post-Newtonian, and general relativistic dynamics of black hole binaries ALEXANDRE LE TIEC, University of Maryland — The detection and analysis of the gravitational radiation from coalescing black holes binaries by the ground-based LIGO/VIRGO and spaced-based LISA observatories requires very accurate theoretical predictions, used as gravitational wave templates. The relativistic dynamics of such compact binary systems can be investigated using a variety of approximation schemes and numerical methods within general relativity: post-Newtonian expansions, black hole perturbation theory, numerical relativity, and the effective-one-body formalism. We shall review the recent work at the multiple interfaces of all these analytical and numerical methods, emphasizing the use of coordinate invariant relations to perform meaningful comparisons. Such comparisons are crucial for several reasons: they provide independant consistency checks of the validity of the various calculations, they help to delineate the respective domains of validity of each method, and ultimately to improve the modelling of black hole binaries.

Alexandre Le Tiec
University of Maryland

Date submitted: 12 Jan 2011 Electronic form version 1.4