Towards Wave Extraction in Numerical Relativity: Transverse Frames CHRISTOPHER BEETLE, Florida Atlantic University, LIOR BURKO, Bates College — This presentation will discuss new developments in a theoretical program to extract the gravitational wave content of a space- time containing a quiescent black hole. The central idea of this program is to seek invariant quantities which may be defined using only the physical metric on space-time, without reference to perturbation expansions or similar background structures, yet which at least partially characterize gravitational radiation fields in those cases where such radiation is incontrovertibly present. This work is expected to be relevant to numerical relativity since it should be possible, at least in principle, to apply its techniques to numerical space-times describing such quiescent black holes. These space- times could describe, for example, the late stages of collisions of binary systems or of supernovae. The goal here, then, is to recover from the late-time numerical data some genuinely gauge- invariant information concerning the radiation generated strongly dynamical processes at earlier times.

Christopher Beetle
Florida Atlantic University

Date submitted: 18 Jan 2005

Electronic form version 1.4