Abstract Submitted
for the APR11 Meeting of
The American Physical Society

Further interpretation and application of frame-drag vorticity and tidal tendicity[1] ROBERT OWEN, Cornell University — Previous talks in this session presented concepts of frame-drag vorticity and tidal tendicity in the bulk spatial slices in curved spacetimes. Analogous concepts can be defined directly on two-surfaces, such as slices of black hole horizons, defining "horizon vortexes" and "horizon tendexes." I will discuss these concepts, their relationship to the piercing of the two-surface by the vortex lines and tendex lines, to the geometry (intrinsic and extrinsic) of the two-surface, and to existing constructions defining black hole spin and other source multipoles. I will also present simulations of equal-mass black hole binaries in the so-called "extreme kick" configuration carried out recently with the SpEC code, and interpret the maximization of the kick in terms of these concepts of vorticity and tendicity.

[1]Supported in part by the Sherman Fairchild Foundation, by NSF Grant Nos. PHY-0969111 and PHY-1005426, and by NASA grant NNX09AF96G.

Robert Owen
Cornell University

Date submitted: 16 Jan 2011 Electronic form version 1.4