

Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Inequivalence Between Active Gravitational Mass and Energy for a Composite Quantum Body¹ NATALIA BAGMET, ANDREI LEBED, Department of Physics, University of Arizona — We derive active gravitational mass operator for the simplest composite quantum body – a hydrogen atom [1]. We show that, despite the fact that it does not commute with energy operator, taken in the absence of gravitational field, the equivalence between the expectation values of active gravitational mass and energy survives for stationary quantum states. Inequivalence between active gravitational mass and energy reveals itself as time-dependent oscillations of the expectation values of active gravitational mass for non-stationary quantum states.

[1] A.G. Lebed, Advances in High Energy Physics, accepted (2014).

¹This work was supported by the NSF under Grant DMR-1104512

Andrei Lebed
Department of Physics, University of Arizona

Date submitted: 02 Jan 2014

Electronic form version 1.4