JOHNS HOPKINS
Center for Environmental
& Applied Fluid Mechanics

Weekly CEAFM Seminar: Fall 2012

Date: **Friday, October 19, 2012**

Time: 11:00 AM

Location: Gilman 50 (Marjorie M. Fisher Hall)

Speaker: **Dr. Nathan Paldor** (The Hebrew University in Jerusalem)

Title: **"*New Solutions of Laplace Tidal Equations over a Sphere*"**

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Abstract

Though Laplace Tidal Equations (LTE) were formulated correctly nearly 250 years ago explicit expressions for zonally propagating waves solutions of these equations have not been found and the currently available information on these waves is given in terms of numerical solutions or infinite series (Hough Functions). For parameter values that typify planet earth, however, an approximate eigenvalue (time-independent Schrodinger) equation can be formulated from the LTE which yields highly accurate approximate solutions for both the phase speeds and the meridional variation of these wave solutions. The various wave solutions are easily classified to Planetary (Rossby) waves and Inertia-Gravity (Poincare) waves according to the (absolute) value of the phase speed while Kelvin waves are associated with a singular point of the eigenvalue equation. The new theory has potential applications in the interpretations of altimetric observations from satellites of the westward propagation of Sea Surface Height features and for the construction of analytic test cases for assessing the accuracy of global GCMs.