Abstract Submitted
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A Study of Tidal Acceleration JAMES GAMBRELL[1], MICHAEL WESCOTT, Univ. South Carolina, MING YIN, Benedict College, DAN OVERCASH, GEORGE VOULGARIS, TIMIR DATTA, Univ. South Carolina — Isaac Newton was the first to show the importance of tide as a source of astronomical information. He also calculated the ratio of lunar and solar masses from the heights of high and low tides at Plymouth. Not surprisingly his estimate was many orders of magnitude too high. Other objects in the Solar system also produce physical influence. We are fabricating several experimental apparatus to measure tidal acceleration in the laboratory. Also a theoretical vector technique to directly calculate the acceleration without the necessity of series expansions is developed. A preliminary report on the apparatus and measurements will be discussed. The acceleration data will be compared with the results, of (i) standard scalar potential calculations [T. Hartmann & H.G. Wenzel, GeoPhys. Res. Lett. 22, 3553 (1995)] and (ii) vector calculations. It is posited that in (i) solar system astrometry, (ii) geo-positioning and (iii) time determination high-precision tidal accelometry can be competitive to other current techniques.

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