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A New Experiment to Measure G[1] HILDE ISACHSEN[2], Humboldt State University, RICARDO DECCA, IUPUI, C.D. HOYLE, Humboldt State University — Of all the fundamental constants of nature, G, the universal gravitational constant, is known with the least precision. The world's best experiments yield values which are incompatible with one another and differ by about 40 times the uncertainty of the most precise experiment. Since part of the past discrepancies between determinations of G can be traced back to the methodology used, the research group at IUPUI in collaboration with Humboldt State University and Syracuse University will combine different approaches to determine G within the same torsion pendulum apparatus, hoping to obtain highly precise values of G from each approach. With the experiments carried out in the same apparatus, the effort will also help to understand the current discrepancies among existing experimental results. In addition to this discussion, this talk will also cover work done during my summer internship at IUPUI with PI Ricardo Decca, including error evaluation related to experimental design and initial construction of the enclosure that will keep the temperature and humidity constant around the apparatus.

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