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Six degree-of-freedom thrust sensor for hybrid rocket RYAN STRICKLAND, Hendrix College — Thrust is the reactive force experienced by a rocket due to the ejection of high velocity matter. A new six degree of freedom thrust sensor has been built for the UALR Hybrid Rocket Facility. The six degrees of freedom are the thrust force components in the three spacial directions (F_x, F_y, F_z) plus the three moments (roll, pitch, yaw). Even though the majority of the rocket's thrust is in the axial direction, the components in the other directions are non-zero, and must be measured to account for the total work done by the rocket motor. The load cells on each of the six uni-axial legs of the sensor were calibrated, and preliminary firing data was collected during the summer of 2008. This research project has been funded by a NASA EPSCoR grant, and a Hendrix Odyssey project award.

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