

Abstract Submitted
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Six degree-of-freedom thrust sensor for hybrid rocket. JOSHUA WILSON, Hendrix College — Thrust is the reactive force experienced by a rocket due to the ejection of high velocity matter. The Hybrid Rocket Facility at the University of Arkansas at Little Rock (UALR) uses strain gauges mounted to an s-beam to measure axial direction thrust of the rocket. 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 sensor design and fabrication are now complete. Calibration of the load cells on each of the six uni-axial legs of the sensor and any preliminary data available will be presented.

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