

Abstract Submitted
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Design of a Six Degree of Freedom Thrust Sensor for a Hybrid Rocket TRIPP MCGEHEE, DOUG WOTEN¹, ANN WRIGHT², Hendrix College — A hybrid rocket is composed of a solid fuel and a separate liquid or gaseous oxidizer. These rockets may be throttled like liquid rockets, are safer than solid rockets, and are much less complex than liquid rockets. However, hybrid rockets produce thrust oscillations that are not practical for large scale use. A lab scale hybrid rocket at the University of Arkansas at Little Rock (UALR) Hybrid Rocket Facility is used to develop sensors to measure physical properties of hybrid rockets. Research is currently being conducted to design a six degree of freedom force sensor to measure the thrust and torque in all three spatial dimensions. The current design mounts the rocket in a rigid cage and connects the cage to a solid table by six sensor legs. The legs utilize strain gauges and a Wheatstone bridge to produce a voltage proportional to the force on the leg. A detailed description of the cage design and the design process will be given.

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