

Lewis University
STEM Undergraduate Research Experience (S.U.R.E.) 2019
Faculty Mentor – Project Application

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Department: Physics

Research Project Title: A Novel Approach to Measure Thrust of an Airplane

Modern airplane thrust readings are calculated using mass flow rates, air velocities, air pressures, and engine opening areas related through the thrust equation. To provide a more direct way of thrust measurement and a cross-check option for pilots, a device will be built to be attached within the engine mount. In preliminary tests, a Vernier dual-range force sensor set to 50N measured forces occurring within the engine mount. The force sensor was attached directly to the engine and pushed against the mount in the first set of trials, while it was placed on a ground mount in the second set of tests. These experiments showed forces being produced within the engine mount, which prove it a viable location to attach a final device. This project will continue to explore the viability of an *in. situ.* direct measurement of the thrust generated by an aircraft's engine.