



## Matthew Hitt

Graduate Research Assistant

Department of Mechanical and  
Aerospace Engineering



### BIO:

Mr. Matthew Hitt is currently a SMART Scholar conducting research at the Propulsion Research Center as a graduate researcher. His research focus is in liquid rocket engine feedline instabilities induced by cryogenic cavitation. His advisor is Dr. Robert Frederick. During his time at the PRC, Mr. Hitt has worked on numerous liquid rocket engine testing programs, cryogenic component tests, liquid propellant development, and hybrid motor tests. Mr. Hitt was involved in bringing the cryogenic oxygen system for the PRC hot-fire test stand into operation and assisted in conducting the first hot-fire test at the PRC involving liquid oxygen. He was also involved in developing the PRC High Flow Rate Cryogenic Test Rig. As part of his tasks at the PRC, Mr. Hitt developed a safety training for new students working on cryogenic or oxygen systems.

Mr. Hitt completed his M.S.E. titled "Experimental Investigation of Cavitation Instability through a Circular Orifice" through the PRC. He has completed the ASTM "Fire Hazards in Oxygen Systems" and "Oxygen Systems Operations and Maintenance" training courses. In addition to his work at the PRC, Mr. Hitt is active in the UAH AIAA student branch where he serves as the chairman of the student branch. Mr. Hitt has been recognized as a Tau Beta Pi Stark Fellow and as the UAH 2012 Mechanical and Aerospace Engineering Department Outstanding Graduate Student of the Year.

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### RELEVANT PUBLICATIONS:

1. Hitt, M. A., Kalathas, L., Coogan, J., and Slegers, N., "UAH Tactical Missile System Design of a Surface to Air Missile for Missile Defense," AIAA-2013-3834, 49th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, San Jose, California, 14-17 July 2013.
2. Ahuja, V., Hosangadi, A., Hitt, M. A., and Lineberry, D. M., "Numerical Simulations of Instabilities in Single-Hole Orifice Elements," AIAA-2013-4058, 49th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, San Jose, California, 14-17 July 2013.
3. Hitt, M. A., Lineberry, D. M., Ahuja, V., and Frederick, R. A., "Experimental Investigation of Cavitation Induced Feedline Instability from an Orifice," AIAA-2012-4029, 48th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Atlanta, Georgia, 29 July – 1 August 2012.
4. Hitt, M. A. and Lineberry, D. M., "Preliminary Design Assessment of a Liquid Oxygen Component Test System at the UAHuntsville Propulsion Research Center," AIAA-2011-6112, 47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, San Diego, California, 31 July – 3 August 2011.
5. Mulkey, H. W., Moser, M. D., and Hitt, M. A., "GOX/Methane Combustion Efficiency of a Swirl Coaxial Injector," AIAA-2009-5141, 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Denver, Colorado, 2-5 August 2009.