# WILLIAM S. DANIELS

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## EDUCATION

**Colorado School of Mines**      B.S. May 2019

Major: Engineering Physics      GPA 3.99

Minor: Computational and Applied Mathematics

## INDUSTRY EXPERIENCE

**Systems Engineering Intern**      **May 2018 - Aug 2018**

*Northrop Grumman, Colorado Springs*

· Worked with the Infrared Hardbody Signatures Team within the Threat Modeling Center (TMC).
· Investigated ways of decreasing simulation run time within the TMC's production process.
· Completed investigations into reflectance and false lines of sight, reducing run time by up to 80%.
· Wrote MATLAB scripts for parsing, plotting, and analysis of infrared signature data.
· Collaborated with other interns to implement a MATLAB and Unix based script that predicts the sunlit status of target objects.

## RESEARCH EXPERIENCE

**Verification of Elve Simulation using Large Dataset of Observed Elves**      **Aug 2018 - Present**

*Research Assistant, Colorado School of Mines*

· Used elves, a class of transient luminous events that occur in the ionosphere, to study lighting.
· Analyzed large elve datasets using ROOT, a data analysis framework written in C++.
· Determined the sensitivity of an elve simulation by mapping the input and output parameter spaces.
· Used this sensitivity study to simulate observed elves and analyze differences between simulation and data.
· Presented my work at the American Physical Society (APS) conference in April.

**Implementation of Astrometry Based Laser System**      **Jan 2018 - Present**

*Research Assistant, Colorado School of Mines*

· Implementing a laser system that gives the pointing direction of a laser from a photo of the stars.
· Created a coordinate conversion algorithm in MATLAB to convert from equatorial coordinates to horizontal coordinates centered on the laser system.
· Determined the relationship between azimuth angle and steps of a stepper motor.
· Currently designing a camera mount that provides five degrees of freedom for alignment.

**Planned Laser Field Campaigns for EUSO Overflight**      **Oct 2016 - Jun 2017**

*Research Assistant, Colorado School of Mines*

· Planned laser field campaigns to test the Extreme Universe Space Observatory (EUSO), which was going to be sent to the ISS.
· Calculated the ground velocity of the ISS and used JSatTrack to plot ground tracks.
· Developed an orbital model for the ISS using Mathematica and JSatTrack that predicts the time and location of passes and takes into account the lunar cycle.

## COMPUTING EXPERIENCE AND FELLOWSHIPS

**Programming Languages:** MATLAB, C++, ROOT, Mathematica, LaTeX

**Operating Systems:** Linux, Windows

**Fellowships:** Mines Undergraduate Research Fellowship, Harvey Scholarship