Over the past two months, members of the Payload and Avionics subsystems have developed a design for a miniature ferromagnetic material detector payload for NASA’s future fleet of micro lunar rovers in response to NASA’s “Honey, I Shrunk the NASA Payload” challenge. The challenge description points out that many innovative ideas do already exist for lunar rover equipment, but are rarely anything more than ideas - for this challenge, NASA specifically requested designs that are above all practical, reasonably feasible, and implementable within the next couple years.

On Earth, ferromagnetic materials can be located due to their detectable local influences on Earth’s magnetic field, but since the moon lacks a strong even magnetic field, locating lunar ferromagnetic materials is dependent on being able to independently generate a strong enough magnetization field. Our payload design uses a solenoid to generate a brief burst of a sufficiently strong magnetization field, and small, sensitive fluxgate magnetometers to detect whether anything was successfully magnetized, indicating the presence of valuable ferromagnetic materials like iron, nickel, and cobalt.

The project team consisting of last season’s payload engineering lead, our recently elected new payload and avionics leads, and a new rocketry member with some experience with advanced magnetism topics is proud of how much they’ve learned over the course of this project, how well they judge the finished design to meet NASA’s payload requirements, and how confident we are in our abilities to develop the design should we win the competition. There are five third place prizes available valued at $5000 each, three second place prizes at $15000 each, and one first place prize at $30000 - since it’s a big competition, we are trying not to get our hopes up too high, but we are anxiously awaiting the judges’ decisions on July 14th.









