

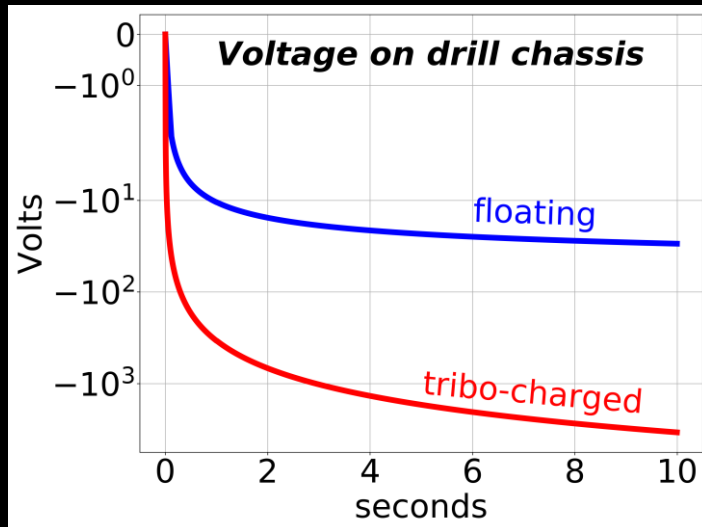
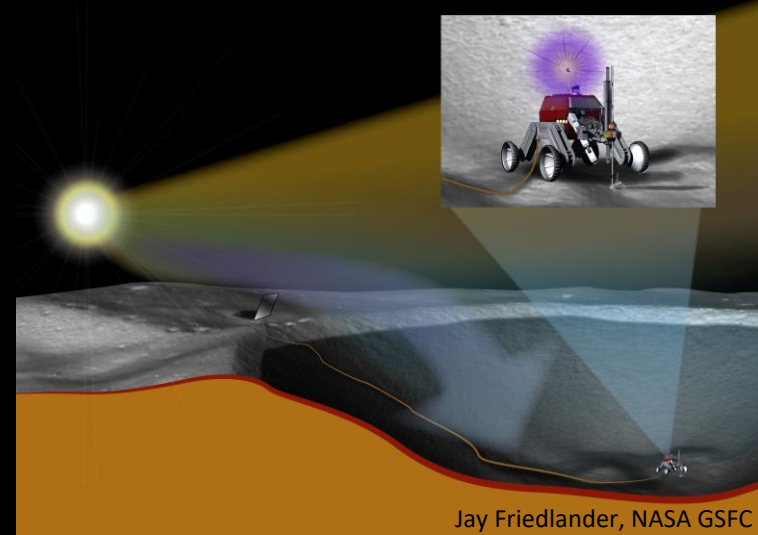
Solutions for a challenging electrical environment; lunar permanently shadowed regions



Dov Rhodes and William Farrell, NASA GSFC (contact: william.m.farrell@nasa.gov)

PROBLEM

- The lunar polar crater environment is dark and plasma-poor, i.e. lacks electrical grounding.
[Rhodes & Farrell, Journal of Geophysical Research, 2019]
- Triboelectric charging (static electricity) can develop large voltage on equipment; rover, space-suit, drill...
[Rhodes & Farrell, Advances in Space Research, submitted]



SOLUTION EFFORTS

- Defining low-grounding “keep away” zones.
- Modeling/simulation of grounding methods:
 1. Portable UV light source.
 2. Cable to illuminated surface.
 3. Mirror/lens sunlight diversion.
- Next step: Experiments to measure static charge accumulation.