Capillary Channel Flow (CCF)
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Objective:
♦ To enable design of spacecraft tanks that can supply gas-free propellant to spacecraft thrusters, directly through capillary vanes, significantly reducing cost and weight, while improving reliability.

Relevance/Impact:
♦ The current design of spacecraft fuel tanks rely on additional reservoirs to prevent the ingestion of gas into the engines during firing. This research is required to update these current models, which do not adequately predict the maximum flow rate achievable through the capillary vanes eliminating the need to over design tanks.

Development Approach:
♦ CCF operates in the MSG and consists of three major systems; two Experiment Units (EU), one Optical Diagnostics Unit (ODU), and one Electronics Subsystem (ESS)/Harness.
♦ The test fluid is HFE7500, a 3M manufactured thermal engineering fluid, ethoxy perfluoroheptane..
♦ Additional operations are scheduled to re-run test points not obtained in the first session.

### Accommodation (carrier)
- Microgravity Science Glovebox

### Upmass (kg)
- (w/o packing factor): 90

### Volume (m³)
- (w/o packing factor): 0.133

### Power (kw)
- (peak): 0.170

### Crew Time (hrs)
- (installation/operations):
  - 2hrs install
  - 1.5hrs exchange units
  - 1.5hrs stow

### Autonomous Ops (hrs):
- 1200 hrs

### Launch/Increment:
- STS-131 (19A), Inc 23

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**Project Life Cycle Schedule**

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