



KISS Workshop on the

Science And Enabling Technologies to Explore of the Interstellar Medium (ISM)

Workshop Organizers:

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Caltech, Pasadena

Mission Capability Goals

1. Get there sooner : 100+ AU in 10 years
2. Travel faster : 5x – 10x Voyager speed
3. Survivability : 50-100 years

Workshop Objectives: Exploring the ISM

1. Articulate vision and key & compelling science questions
2. Identify specific near-term science exploration goals
3. Set mission objectives and concepts for the next 10-20 years
4. Specify Flight System and Measurement Requirements
5. Assess technology drivers and propose technology development plan

Why now?

- ⊗ Voyager and Kepler science discoveries, GALEX, Herschel
- ⊗ New Horizons: mission to Pluto and beyond
- ⊗ Solar Probe (2018): Science and Technology
 - ⊗ Thermal Protection System, etc.
- ⊗ SLS Launch Vehicle
- ⊗ Technology progression/breakthroughs in the past decade
 - ⊗ Deep Space Optical Communications: DSOC
 - ⊗ CubeSats: systems miniaturization
 - ⊗ Payload miniaturization
 - ⊗ Rosetta Hibernation, long-term survivability
 - ⊗ Solar Sail technology development
 - ⊗ Power, Energy storage
 - ⊗ Mission Design and trajectory analysis

Notes and Sentiments on the 1st day of the Workshop

- ⊗ Can we do a mission sooner rather than later? ~ 2024
 - ⊗ Technology freeze 2010
 - ⊗ Solar Sails latest technology
 - ⊗ eMMRTG ~ 2024 launch
 - ⊗ SLS Block 1B

- ⊗ Is exploring the LISM a self sufficient and compelling target:
 - ⊗ 100 – 200 AU

- ⊗ Are there Technology Demonstrations worth proposing?
 - ⊗ TPS, Perihelion burn (Oberth maneuver)

- ⊗ Is there a low-cost ‘armada of small probes’ that are possible in the near-term, as incremental science to the program science goals (LISM, etc.)