Wind Rider Pathfinder Mission to Trappist-1 Solar Gravitational Lens Focal Region in 8 Years

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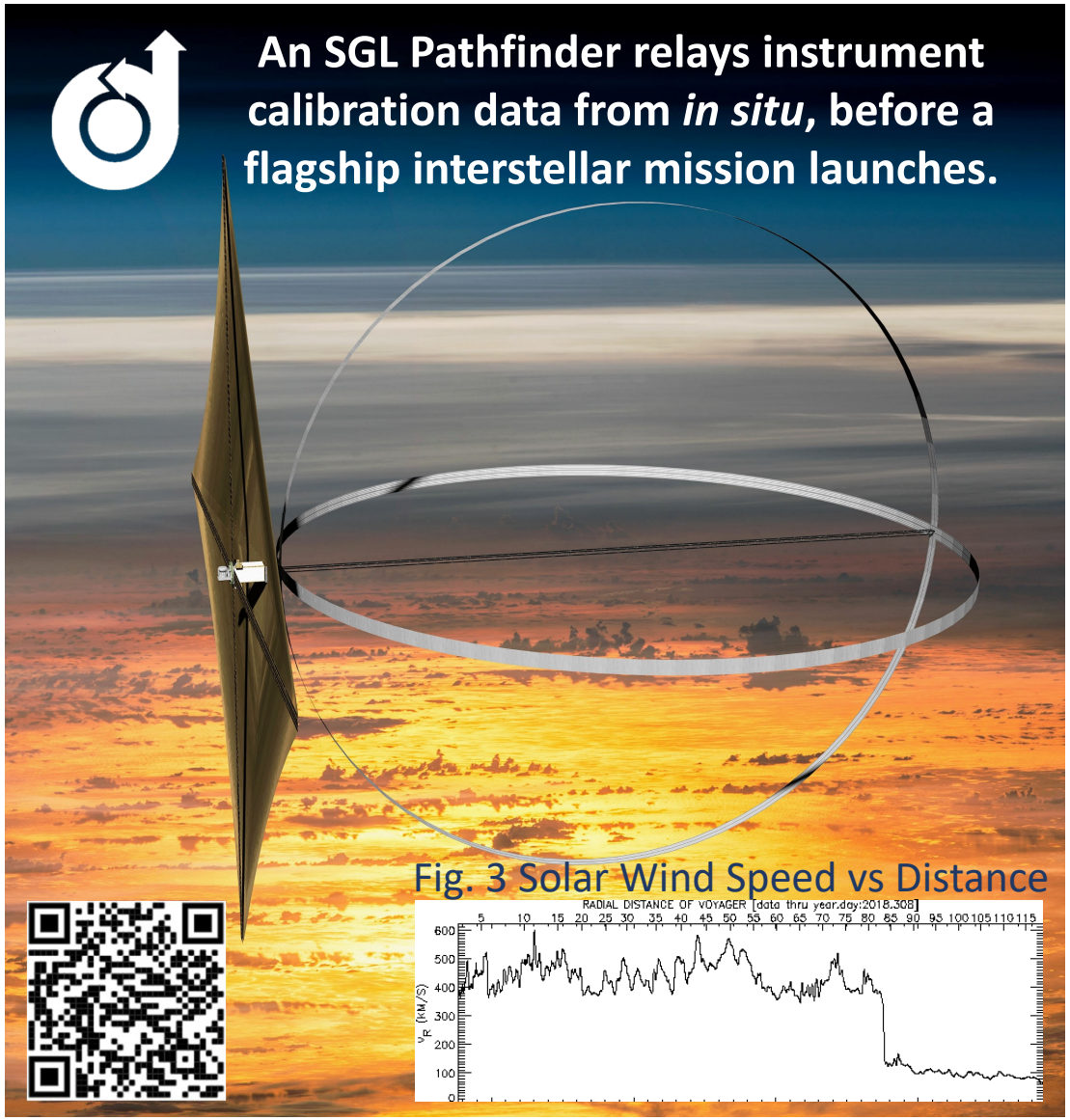
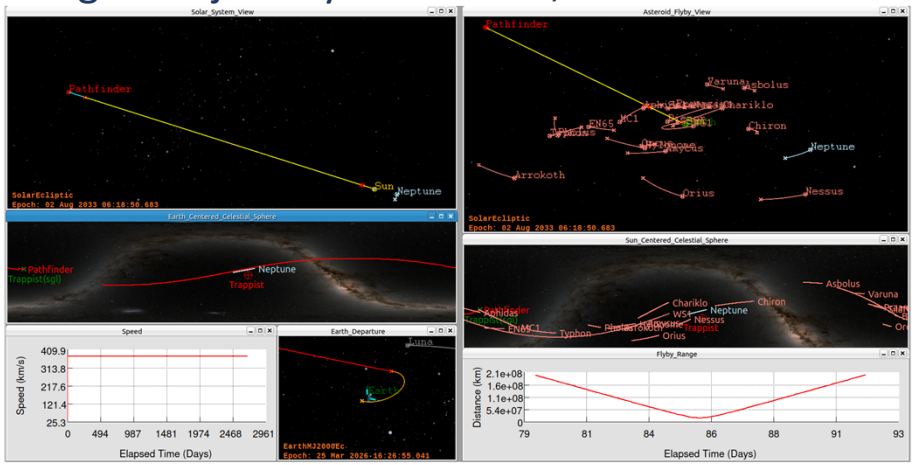


Fig. 3 Solar Wind Speed vs Distance

Fig. 1 Trajectory Simulation, Centaurs to SGL



Trajectory Design:

The trajectory to the Trappist-1 Solar Gravity Lens (SGL) was initially modeled in an internal seed code and then designed in Thinking Systems' Astrodynamics Workbench, as shown in Figure 1. The 6.9 year trajectory to the SGL, along with its projection on the celestial sphere, is shown on the left. Pathfinder reaches its 390 km/s cruising speed quickly. Once the trajectory model was complete, the PIP Group searched for targets of opportunity along its path. The right side of Figure 1 shows a collection of Trans-Neptunian Objects (along with Centaur asteroids) considered for flyby opportunities along the trajectory, and includes a modeled close approach to fly-by one of those objects.

Fig. 2 Photon-Conversion Radioisotope Battery