Opportunities to Study the Exoplanets in our Backyard From an Interstellar Probe. A. M. Rymer, K. Stevenson, K. Mandt, R. McNutt, P. Brandt, N. Izenberg, A. Cocoros, C. Beichman

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The Interstellar Probe would be a robotic one-way mission into the local interstellar medium with the science objective of understanding our heliosphere as a habitable astrosphere. As the Interstellar Probe travels through and beyond the orbit of the solar system planets it will have the opportunity to look back at our own planets as we currently view exoplanets. This unprecedented opportunity would be available no matter what trajectory the probe takes into interstellar space and would provide the chance to consider high-level questions relating to exoplanetary research such as: What does our solar system look like to our nearest neighbors? Would ETs be capable of detecting life on Earth and, if so, what methods would they most likely use? What insights can we gain about exoplanetary systems by observing our own system at up to 1000 AU?

Here we discuss the opportunity and elucidate on the measurement techniques and other considerations that would be needed to make exoplanetary relevant measurements from the Interstellar Probe.

Figure 1. Figure showing the ‘ribbon’ feature on the edge of our heliosphere (by the IBEX mission) along with the locations of several key object locations, such as the ‘Nose’ and ‘Tail’ of the heliosphere, the current locations of the Voyage spacecraft and the locations of planets and KBOs during the likely Interstellar Probe epoch.