

SED Technical Committee of Interest: Solar Space Applications

Title: Scalability of Boom-Mounted Solar Sails

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Abstract: Critical to enabling the long-range vision of routine use of the Sun's inexhaustible energy supply to propel spacecraft on their journeys through the solar system is scalability of the sailcraft designs to meet the ever-higher performance requirements of the missions of interest. This paper reports on the results of a recently-completed study sponsored by NASA's Gossamer Program and performed by a government/industrial team comprised of NASA's Jet Propulsion Laboratory (JPL) and L'Garde, Inc. of Tustin, CA to investigate the scalability of inflatable-boom-based solar sails to meet the performance requirements of the most compelling missions of interest to the user community including NASA, DoD, NOAA, and the commercial space community. The results show ready scalability of inflatable-boom technology to support missions requiring sails of up to 300 x 300 m in size and having areal mass density requirements of as low as 4-4.5 g/m².