Paper ID: 79375
student

21st IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)
Strategies for Rapid Implementation of Interstellar Missions: Precursors and Beyond (4)

Author: Mr. Pauli Laine
Finnish Astronautical Society, Finland, pauli.erik.laine@gmail.com

FLYBY, DECELERATION, OR ORBIT INSERTION? CRITICAL MISSION DESIGN PARAMETER

Abstract

It is a daunting engineering task to develop propulsion system for a meaningful interstellar mission. Interstellar vehicle must be accelerated to velocity that is significant part of the speed of light in order to reach light-year distances within foreseeable future. Other (and relatively rarely processed) daunting engineering task is how to slow vehicle down when target stellar system is reached, or how to carry out meaningful measurements and other mission objectives during the very short flyby time. However, choosing between deceleration, orbit insertion, and flyby is the key parameter for any interstellar mission. If slowdown requires propellant, it will increase the initial mass of the vehicle, and will affect the overall design of the mission. On the other hand, could reasonable slowdown be done without propellant, e.g. with solar sail against stellar wind? Some proposed deceleration and flyby designs are presented here.