PROJECT ICARUS: ANTIMATTER CATALYZED FUSION PROPULSION FOR INTERSTELLAR MISSIONS. R. K. Obousy[1] and K. F. Long and T. Smith, Icarus Intersellar, 2809 Spenard Rd, Anchorage, AK, 99503-3601, robousy@icarusinterstellar.org.

Abstract: Due to the ability of antiprotons to annihilate with ordinary matter with 100% efficiency, antiprotons serve as an exceptionally high-energy density storage mechanism. Upon annihilation, sufficient energy can be generated to trigger fusion reactions. In this paper we study a variety of ways that antiprotons can be utilized as drives for fusion ignition. In addition, we explore a number of specific anti-proton driven fusion propulsion concepts. This includes volumetric ignition, hotspot ignition and fast ignition. We also explore various antiproton driven magnetically insulated inertial confinement fusion schemes, including antimatter driven P-B11, anti-proton driven inertial confinement fuson and gas core antimatter rockets. The technology maturity of such concepts is examined, and considered in the context of Project Icarus, a theoretical engineering design study for an unmanned interstellar probe. This is a submission of the Project Icarus Study Group.

References:

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