

IAF SPACE PROPULSION SYMPOSIUM (C4)

Joint Session on Nuclear Power and Propulsion Systems, and Propellantless Propulsion (10-C3.5)

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NUCLEAR PROPULSION TECHNOLOGY FOR SATELLITE APPLICATIONS HISTORICAL
OVERVIEW AND CURRENT DEVELOPMENTS

Abstract

This paper provides a comprehensive exploration of current developments in nuclear propulsion technologies. Focusing on the historical overview and the latest advancements, the paper deals with Fusion and Fission propulsion, going into detail with Nuclear Thermal Propulsion (NTP) and Nuclear Electric Propulsion (NEP). The paper is divided into two main chapters: fission propulsion and fusion propulsion. For each of the technologies, the paper is accounting for fuel evaluation (LEU, HALEU, HEU for fission or deuterium and tritium for fusion), historical missions and tests, technology challenges, and future developments. The aim of the paper is to evaluate the current status of this promising technology, which has been on standby in recent decades due to geopolitical situations all around the world.