

Entering into Space and New Energy and Propulsion Technology (7)
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LASER ABLATION PROPULSION LAUNCH SYSTEM (LAPLAS) POTENTIALITIES.

Abstract

Reaching the Earth's orbit from the ground, in terms of the required energy and cost, remains the fundamental problem hampering the industrialization of space, orbital and deep, and its exploration at large.

The chemical rocket propulsion is the only type of propulsion in use for the ground-to-orbit launch. After almost a century of development the upsides and downsides of the chemical rocket propulsion are well understood. Being technologically complex and operationally hazardous, it is too expensive and limited in availability to adequately meet the existing, let alone the future market needs.

The conventional launch systems continue struggling to get closer to 2nd generation launch system level, as per NASA criteria, and, for their most part, will never make it. The 3rd generation launch system level is beyond the chemical propulsion rocket technology reach altogether.

At the same time, the estimated LAPLaS dedicated launch to LEO total specific cost is to be around 300 USD per kg for very small payloads with abundant availability (high frequency). This means that LAPLaS potentially belongs to the 3rd generation of launch systems, which allow for a sufficient return-on-investment and subsequent self-sustaining development of profitable commercial launch architectures.

LAPLaS will not compete with the conventional launching means on the powerful thrust and heavy payloads delivery to orbit. Instead, it will provide capacity for the very small payloads ground-to-LEO dedicated launch, very inexpensively and as often as one may wish. Thereby, LAPLaS will make access to LEO truly affordable for multitude of the space market new entrants and will lead to the space industrialization era. LAPLaS will enable not only the orbital industrial activities but also the deep space ones.