Abstract

Air breathing gas turbines and rockets propulsion systems are reaching an asymptotic plateau of performance. While significant advances in the optimization of their components have been made, leading to maximum efficiency of each sub-system, their basic design has not changed for many decades. To enable a transformational change in capabilities of future aero-vehicles there is a need for a disruptive technology that will lead to new architectures of propulsion systems. Pressure gain combustion, accomplished by low and high frequency pulsating detonations, can provide such a breakthrough. This new technology enables design of high efficiency, low pollution, and high power density propulsion systems with reduced complexity, size, weight, and cost. It is adaptable to both air breathing and rocket propulsion applications and also to power generation machines.

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