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The Black Light Rocket Engine

This proposal describes a Phase I feasibility study aimed at assessing the potential of Black Light Process technology toward the development of high thrust, high specific impulse space propulsion systems. The Black Light Process is a potentially revolutionary energy technology currently under development by Black Light Power, Inc. The technology is based on the hypothesis that, under certain conditions, hydrogen atoms can undergo transitions to energy levels corresponding to fractional principal quantum numbers. In support of this theory, numerous laboratories have measured excess energy from low-pressure hydrogen gas systems, and a variety of novel extreme ultraviolet emission lines have been observed at low temperatures. To date, Black Light Power, Inc. and others have sought to harness this new energy source using Calvet calorimetry, closed calorimetry and microwave excited gas plasma systems. Prior to the proposed study, however, no attempt has been made to apply this new energy source toward the development of a rocket engine. Preliminary calculations suggest that a Black Light Rocket (BLR) engine can achieve performance several orders of magnitude greater than chemical rocket propulsion (e.g., $I_{sp} > 10,000$ s) and, unlike other high I_{sp} engines, the BLR engine is not limited to low thrust. The Phase I study proposed herein will consist of the development of a theoretical model, identification of potential space mission applications, and development of a bench scale BLR thruster and thrust stand.

