Highly Efficient Low Power Nuclear Jet Engine

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Current requirements for jet engines normally involve obtaining a great, maximum power while using the small mass of fuel and oxidizer. However, the task of creating effective low power rocket engines remained underestimated. The purpose was to develop a principal applicable scheme of a highly efficient low-power propulsion engine. To reach this goal I propose a solution (hypothesis) including an alpha-particles source and a directing mirror. Since the speed of the fuel release from the nozzle of a conventional rocket is limited (~3 km/s) whereas there is virtually no limit to the speed of alpha particles (mean value ~10^4 km/s), the advantage of the proposed engine becomes obvious in comparison with the classical rocket engine (uses less fuel to create the same amount of propulsion). The proposed design of the engine works if we just put the radioactive source on the surface of the spacecraft. Addition of the directing mirror into the construction (the optimal form of which is a paraboloid) increases the engine power by turning the movement of some (albeit very few) alpha particles in the direction required to increase the traction. The possibility of increasing the amount of reflected alpha particles (with small energy) was considered as further solution due to the electrostatic field created automatically by a radioactive body (negative charge) and a mirror - a positive charge. Generally, the proposed engine has a low thrust (10^(-4) N) because of the small amount of alpha particles leaving the engine per time unit. This can be changed by selecting the mass of the radioactive material to obtain the required power value.

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