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TRANSFORMING NEAR-FIELD MICRO-GRAVITY SOURCES INTO FAR-FIELD LIFE SUPPORT
SYSTEMS

Abstract

It is observed that human body responses positively in or near 1G constant environments, both real and stimulated, on Earth or in space. Popular stimulated 1G life support for orbital spacecraft involves centrifugal living space. These centrifugal systems are not homogenous gravitational flux field and required constant circular motions orthogonal to traveling vector. To support enduring space travel, theorists had proposed various gravity dampening systems normal with traveling vector and stimulated 1G living space with micro-gravity drives.

This paper proposes a new concept of transforming near-field micro-gravity systems into far-field, stimulated environments that human enjoyed on the surface of the Earth. Near-field micro-gravity is defined as $>75\%$ flux field exerted on a standard 1.7 meter human length with 1G average accelerating vector; far-field is $<25\%$ flux. The author exploited non-linear relationship of human flux sensing that is proportional to accelerating frequency and inversely proportional to average accelerating force and cumulative time.

The paper discusses single micro-gravity dampening system in linear accelerating mode with inversed distance and power configuration normal to traveling vector. The paper also discusses minimum four micro-gravity source system in a linear-offset quaternion configuration to stimulate sub-optimal far-field 1G living space on a traveling spacecraft, in either open-loop and tracking mode.