A Large Mechanical Force
From the Quantum-Vacuum

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Using current technology, Quantum-Thrusters may prove to be a fundamentally new class of Prime Movers and Sources of Energy.

Virtual Photons of the Quantum Vacuum naturally impart very-real momentum to matter, causing Black Body Radiation, the speed and positional uncertainties of subatomic particles, Einstein's Brownian Motion, Van der Waals Forces, the anomalously energetic behavior of liquid helium and macroscopic movement in Casimir Force Experiments. Quantum-Sails along with *all* these phenomena, experience ***net*** thrust from the *omnidirectional* virtual photon flux, needing no other energy or reaction-mass because:

- Quantum-Sails *passively* maintain the same temperature on all sides, using heat-conductive materials;

- ***All*** **absorbed energy is re-radiated as Black Body Radiation,** equally in *all* directions, thus self-canceling all of *this* momentum.

- Identical photons impart twice as much momentum to its reflector, as to its absorber, which is facing the opposite direction, on the other side.

- Using 8-9 nm wavelengths, this *extra*-momentum is unopposed, leaving a large mechanical thrust from the Quantum Vacuum.

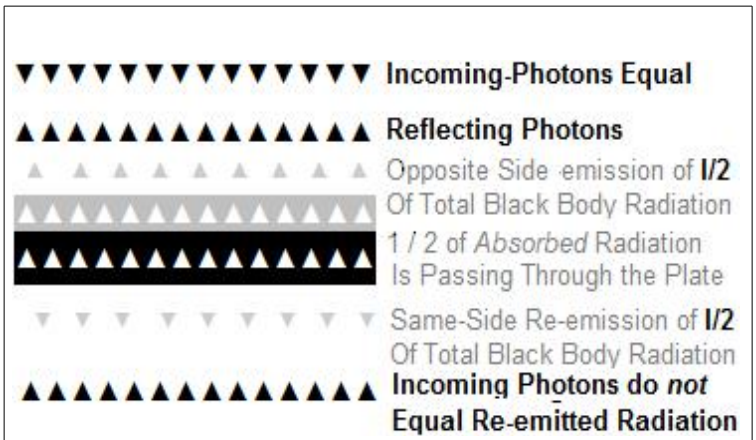

Fig. 1