

Abstract Submitted
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Vacuum Energy and Its Consequences LIONEL HEWETT, Texas A&M University-Kingsville — Intuitively one would think that a perfect vacuum should contain no energy. However, quantum mechanics asserts that virtual particles popping in and out of existence too fast to be observed directly should produce a non-zero average energy density for empty space. This presentation discusses how quantum mechanics predicts too large a value for this energy density, how the Casimir effect correctly predicts the measured value of the vacuum energy between closely spaced objects, how time-symmetric cosmology predicts the energy density of interstellar space, how vacuum energy produces negative pressure, how vacuum energy causes the current universe to accelerate its expansion, and why vacuum energy cannot be tapped so as to produce an inexhaustible source of energy for all mankind.

Lionel Hewett
Texas A&M University-Kingsville

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