

# **Disproving Induced Gravity and Induced Inertia Theories Related to Zero Point Energy**

Jake Todd

Formerly of the University of Washington and Microsoft

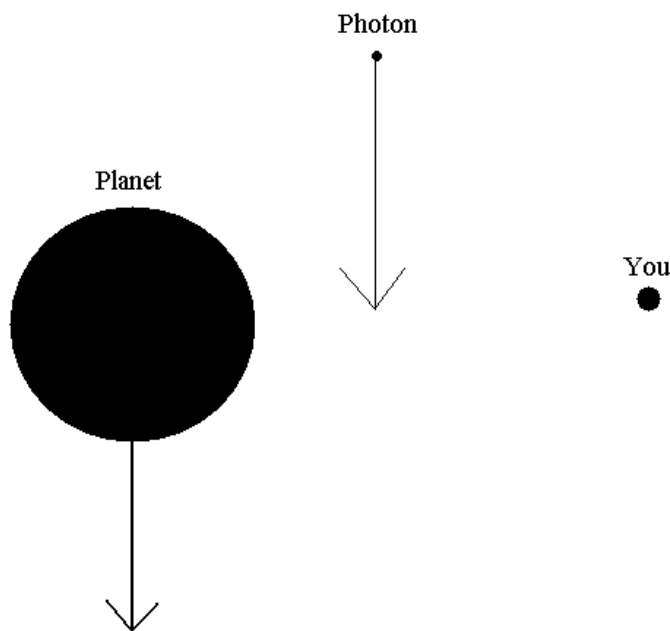
[Jake.Todd@Gmail.com](mailto:Jake.Todd@Gmail.com)

**ABSTRACT.** Two induced gravity theories and one induced inertia theory, all based on zero point energy, are presented and disproved. This is achieved with a thought experiment and the established, experimentally proven principles of Relativity.

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This paper is not the Weinberg–Witten theorem<sup>1</sup> because this thought experiment is not limited in scope to *massless* particles as constituents of zero point energy and gravity. Induced gravity, as explained by Sakharov<sup>2</sup>, is the theory that gravity emerges from zero point energy. It purports that in stretched spacetime, the zero point energy is more spread out. Hypothetically, this causes things to move towards a body that has caused spacetime to stretch because of the pressure differences of zero point energy as you move from one region of stretched space to another. Puthoff<sup>3</sup> took it in a new direction, saying that zero point energy causes matter to move around quickly, and that the movement causes electromagnetic forces to exist and be responsible for gravity. Puthoff also speaks of induced inertia, again as a result of zero point energy causing electromagnetic disturbances that resist acceleration<sup>4</sup>. However, a simple relativistic<sup>5</sup> thought-experiment disproves all of these lines of thinking.

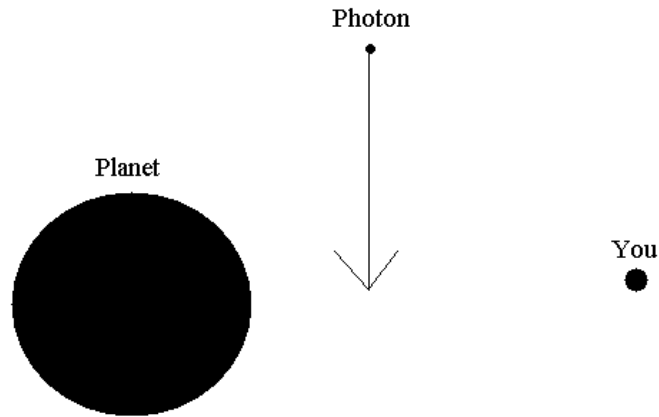
Consider the following two scenarios:



Scenario 1: Imagine you are in an inertial reference frame and a planet is moving past you very quickly. A photon is coming towards you and will also pass the planet. The photon is not on a collision-course with you. The photon is moving parallel to, and

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- 1 Weinberg, S. and Witten, E. (1980). *Limits on Massless Particles*. KEK. Retrieved from <http://ccdb4fs.kek.jp/cgi-bin/img/allpdf?198101322>
  - 2 Sakharov, A. (1967). *Vacuum Fluctuations in Curved Space and the Theory of Gravitation*. Translated from Doklady Akademii Nauk SSSR, vol. 177, No. 1, pp. 70–71, November 1967. Original article submitted August 28, 1967. Retrieved from <http://www.math.uwaterloo.ca/~akempf/sakharov.pdf>
  - 3 Puthoff, H. (1988). *Gravity as a Zero-Point Fluctuation Force*. Physical Review A. Volume 39, Number 5, pp. 2333-2342 Retrieved from [http://www.earthtech.org/publications/PRAv39\\_2333.pdf](http://www.earthtech.org/publications/PRAv39_2333.pdf)
  - 4 Puthoff, H. (1994). *Inertia as a Zero-Point Lorentz Force*. Physical Review A. Volume 49, Number 2, pp. 678-694 Retrieved from [http://www.zpower.com/ge/documents/ZPEPaper\\_InertiaAsAZeroPointFieldLorenzForce.pdf](http://www.zpower.com/ge/documents/ZPEPaper_InertiaAsAZeroPointFieldLorenzForce.pdf)
  - 5 Einstein, A. and Lawson, R. (2005). *Relativity: The Special and the General Theory*. New York, NY: Pi Press.

in the same direction as, the planet.



Scenario 2: You are at rest relative to the same planet and a photon is coming towards you. The photon, on the same trajectory as in Scenario 1, will pass you and the planet. Both you and the planet are in inertial reference frames.

From the planet's reference frames in both scenarios, the photon passes it in exactly the same amount of time because of the constant speed of light in any reference frame. Since the speed of light is constant in all reference frames, from your reference frame, the photon will spend more time near the planet in Scenario 1 compared with Scenario 2. This would allow the theoretical zero point energy pressure differences, created by the stretching of spacetime, more time to exert emergent gravity on the photon in Scenario 1 compared with Scenario 2. However, the photon's trajectory is curved by the same amount in both scenarios from any inertial reference frame. This shows that the photon is following the curvature of spacetime caused by the planet in perfect agreement with The Theory of Relativity. Sakharov's induced gravity is disproved.

This thought experiment can be applied to the directions Puthoff took things in. As above, in Scenario 1, the photon would be closer to the planet for a longer amount of time from your inertial reference frame. This would allow Puthoff's zero point energy electromagnetic gravitation more time to act on the photon and overcome the induced inertia, compared with Scenario 2. However, the same result occurs and The Theory of Relativity proves itself again by the photon curving by the same amount in its trajectory as observed from any inertial reference frame. The photon is simply following the curvature of spacetime. Puthoff's induced gravity and induced inertia are disproved.

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