Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Sonoluminescence and Vacuum Radiation JUSTIN MELUNIS, EDUARDO FLORES, Rowan University — Sonoluminescence is the generation of light from sound. Our goal is to understand why a bubble trapped in water could generate light from sound. In our work we investigate the contribution of the dynamical Casimir effect to this phenomenon. In previous work researchers have approach this problem as a semi static Casimir effect and have not been able to show a significant contribution of the Casimir effect to sonoluminescence. In our approach, we treat the surface of the bubble as a highly reflecting surface, thus, the electric field of the zero-point modes at the surface is zero. Thus, when the bubble collapses the zero-point modes inside and outside are disturbed. Since the dynamics of zero-point mode fields obey Maxwell equations we can simulate their dynamics using programs like Mathematica. We study the radiation of the excited zero-point mode field.

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Date submitted: 19 Nov 2011 Electronic form version 1.4