

Abstract Submitted  
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**Four Proofs of Particle to Wave of Energy Ratio by Three to One** GREGORY LIGHT, Providence Coll — We begin with a literature review of wave-particle duality and then proceed with four alternative mathematical proofs of the energy ratio of particle to wave to be 3 to 1. The first proof is by an application of Gauss divergence theorem, with the values of  $c$ ,  $G$ , and  $h$  altered along with their associated units; the second is a variation of the first by keeping all the physical constants; the third is by a separation of photon as a point particle from its associated electromagnetic wave as a field; the fourth is based on the fact that a ball of radius 1 has its spherical area of value 3 to 1 in ratio to its volume. We conclude with a discussion of the limit of our analysis and for phenomenological support of our model..

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