

A modification of the Pryce-Ward formula for semi-classical simulations of annihilation photons correlations

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A joint Compton scattering of two maximally entangled photons from an electron-positron annihilation is described by the famous Pryce-Ward statistics. Due to the nature of the entangled state, this statistics is physically (but not mathematically) incompatible with the Klein-Nishina statistics for single photons. We show that these two statistics can be artificially reconciled for purposes of semi-classical simulations treating the photons as classical entities, while simultaneously implementing the non-classical correlations.

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