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Momentum of Light in an Atom

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The Abraham-Minkowski “controversy” is a debate in physics which began over a century ago, stemming from an ambiguity in defining the momentum of light within a medium. Simple physical arguments lead to a prediction that the momentum of light should either increase or decrease by a factor of the refractive index (compared to its value in the vacuum) upon entering a medium. Experimental attempts to discriminate between the two theories often support one over the other at first glance, but upon deeper consideration cannot refute either. While a resolution to the apparent paradox has been proposed, some physicists remain unconvinced. By measuring the interaction time between light and an atom, we hope to extract information about the momentum imparted to the atom by light, thereby elucidating the momentum of light in a medium.

Keyword-1

Light in a medium

Keyword-2

Abraham-Minkowski controversy

Keyword-3

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