

Abstract

# On the Symmetry of the Electromagnetic Energy-Momentum Tensor in Media <sup>†</sup>

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The electromagnetic energy-momentum tensor in media has been under discussion for more than 100 years. The interest in this topic has become quite large in recent years, most likely related to the advent of very accurate measurement techniques in optics. The purpose of this contribution is two-fold: (1) to demonstrate by means of a mapping procedure how the electromagnetic field in a medium can be mapped into a corresponding field in vacuum, showing how naturally the Minkowski energy-momentum tensor fits into the canonical formalism, and (2) to give a critical analysis of some recent experiments in radiation optics. In several of the experiments, it turns out that it is the surface force (common for the Minkowski and Abraham tensors) that is measured, instead of the electromagnetic momentum itself. The talk is based upon the recent paper of I. Brevik published in *Annals of Physics* 377, 10 (2017).



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