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Progress in Relativistic Electro-Magneto-Fluid Dynamics of Polarized Media

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Abstract content
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2015 marks an important milestone in the history of physics: one hundred years ago, in November 1915, Albert Einstein wrote down the famous field equations of General Relativity. In its 68th sesion the UN General Assembly proclaimed 2015 as the International Year of Light and Light-based Technologies (IYL 2015).
Following the epoch-making paper of 1905 by Einstein on special relativity there had been a need to adapt thermodynamics, electrodynamics and continuum mechanics to the requirements of Lorentz invariance. For more than 100 years physicists have been debating the correct form of the energy-momentum tensor required to describe the thermodynamics of a polarized medium in interaction with electromagnetic and gravitational fields. In this paper we look at the progress on this subject to date and offer the possible solution to the debate.

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