The time reversal invariance of classical electromagnetic theory: Albert versus Malament.

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Abstract

David Albert has recently argued that classical electromagnetic theory (EM) is not time reversal invariant (non-TRI), while David Malament rejects this argument and maintains the orthodox result, that EM is TRI. Both Albert's and Malament's arguments are analysed, and both are found wanting in certain respects. It is argued here that the result really depends on the choice of theoretical ontology choosen to interpret EM theory, and there is more than one plausible choice. Albert and Malament have choosen different plausible ontologies; but neither shows that their choice of interpretation is definitive. Deeper principles about this choice are examined. The extension to EM theory with magnetic monopoles is also examined. It is concluded that, despite certain flaws in his account, Albert's analysis does reveal serious problems in the orthodox account, which Malament's response does not adequately address.

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