

Abstract Submitted  
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**Finite Electron Temperature Effects on Interferometric Measurements in Fusion Plasmas**<sup>1</sup> V.V. MIRNOV, W.X. DING, D.L. BROWER, University of Wisconsin - Madison, Center for Magnetic Self Organization in Lab and Astrophysical Plasmas, University of California at Los Angeles — Finite electron temperature effects on interferometry and polarimetry measurements in burning plasma are considered. In the limit when the wave frequency is much higher than the electron cyclotron frequency, the dispersion relation is derived to lowest order in  $T_e/m_e c^2 \ll 1$ . Previous analysis of the problem included non-relativistic dispersive corrections only [1]. We show that the relativistic effects are equally important and result in a change of the sign of the thermal correction to the Faraday rotation angle. Experimental observation of the “sign” effect could be important verification of fundamental relativistic physics in high-temperature plasma devices. The implication of the thermal corrections for ITER interferometer diagnostics is discussed.

[1] S.E.Segre, V.Zanza, *Physics of Plasmas*, **9**, 2919 (2002)

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Vladimir Mirnov  
University of Wisconsin-Madison

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