

THE SEARCH FOR A PRIMORDIAL MAGNETIC FIELD

Prof. Grant Mathews ❖ University of Notre Dame

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4:00 P.M. ❖ 118 NSH

(Refreshments at 3:30 P.M. NSH 202)

Magnetic fields appear wherever plasma and currents can be found. As such, they thread through all scales in Nature. It is natural, therefore, to suppose that magnetic fields might have been formed within the high temperature environments of the big bang. Such a primordial magnetic field (PMF) would be expected to arise from and/or influence a variety of cosmological phenomena such as inflation, cosmic phase transitions, big bang nucleosynthesis, the cosmic microwave background (CMB) temperature and polarization anisotropies, the cosmic gravity wave background, and the formation of largescale structure. In this talk, we will summarize the models for the origin of a PMF and the development of theoretical models for analyzing the observational consequences of a PMF. We also summarize the current state of the art in the search for observational evidence of a PMF. In particular, we review the framework needed to calculate the effects of a PMF power spectrum on the CMB and the development of large scale structure. We summarize the current constraints on the PMF amplitude and the power spectral index and discuss prospects for better determining these quantities in the near future.

Colloquium

All interested
persons are
cordially
invited to
attend.