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Relativistic Pulsar Winds with Pressure Anisotropy and Heat Flow JASON TENBARGE, RICHARD HAZELTINE, SWADESH MAHAJAN, Institute for Fusion Studies, University of Texas — A newly developed covariant fluid model for magnetized plasmas[1], incorporating anisotropy in both temperature and heat flow, is used to study equatorial radial profiles of density, velocity, magnetic field, pressure, and heat flow in the hot, strongly magnetized wind region beyond the light cylinder of pulsar magnetospheres. Radiative losses are assumed to have isotropized the wind region plasma so that $P_{\|} \gg P_{\perp}$. Fluid velocities are taken as mildly relativistic, while temperatures are ultra-relativistic. This study of pulsar magnetospheres extends the work by Tsikarishvili et al.[2] to a more general fluid closure including heat flow. The general covariant fluid model in spherical geometry and equations of state for arbitrary temperature will also be presented for more general applicability.

[1]J. M. TenBarge, R. D. Hazeltine, and S. M. Mahajan, Phys. Plasmas **15**, 062112 (2008).
[2]E. G. Tsikarishvili, A. D. Rogava, and D. G. Tsiklauri, Ap. J. **439**, 822 (1995).

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