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Relativistic Reconnection with Radiation JASON TENBARGE, RICHARD HAZELTINE, Institute for Fusion Studies / University of Texas — Relativistic reconnection is the likely mechanism for high energy emission in magnetar, pulsar, and black hole magnetospheres, as well as gamma ray bursts and jets in active galactic nuclei. In such astrophysical systems, the magnetic energy density greatly exceeds the particles' thermal and rest mass energy density. In the dissipation region of the reconnecting field, the large release of magnetic energy heats the plasma above the pair production threshold making the plasma optically thick to Thompson scattering. The increased opacity confines the released magnetic energy, which is converted into enhanced plasma outflow. The effect of radiation is incorporated via the Landau-Lifshitz prescription for the radiation reaction force, and the relativistic collision operator of Dzavakhishvili and Tsintsadze is employed to calculate the resistivity of the plasma.

Jason TenBarge
Institute for Fusion Studies / University of Texas

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