Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Magnetohydrodynamic Bondi–Hoyle Accretion[1] ANDREW PENNER, University of British Columbia — In relativistic Bondi–Hoyle accretion, a massive body travels through a uniform space background. As this body accretes matter it is known to develop either a bow shock or a tail shock. For the parameter space where a bow shock develops, there is the potential for a flip-flop instability to develop. Previous studies of the relativistic extension by Font etal. revealed that the flip-flop instability did not develop; however, they caution that their parameter space, when taken in the Newtonian limit, was outside of the regime that a Newtonian flip-flop would occur. In my research, I extend the works of Font etal. to include the effects of ideal magnetohydrodynamics. First, I continue the search for the flip-flop instability by analyzing lower asymptotic speeds of sound, which correspond closer to the Newtonian region in which a flip-flop will occur. I then include the magnetic fields to determine if these extra fields can trigger further instabilities and possibly enhance the likelihood of developing a flip-flop instability.

[1]With support from Dr. Matthew Choptuik (UBC)

Andrew Penner
University of British Columbia

Date submitted: 20 Mar 2009 Electronic form version 1.4