

SPACE AND COSMIC RAY PHYSICS SEMINAR

*University of Maryland
Computer & Space Sciences Building, Room 2400
4:30 PM Monday, March 14, 2005
Coffee, Tea & cookies 4:00-4:30 PM*

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Progress in Understanding Magnetic Reconnection at the Earth's Magnetopause

Over the past ~2 years, there has been significant progress in understanding the stability and location of magnetic reconnection at the magnetopause. Both of these aspects of reconnection required development and verification of several new observational techniques. This talk focuses on two techniques and their results. Both techniques are applied to data from the Earth's magnetospheric cusps. The first technique uses observations of precipitating protons in the ionosphere from the IMAGE spacecraft. Using this technique, reconnection is shown to be steady for many hours. This result is particularly important for northward IMF, where the reconnection site can be located at high latitudes. The second technique uses in situ observations of the low energy cutoffs of precipitating ions to determine the distance from the spacecraft to the reconnection site. This technique is used to show that both anti-parallel and component reconnection occur at the magnetopause. These new results are encouraging for future missions, like the Magnetospheric Multiscale mission, which will investigate reconnection sites in situ. They also raise important questions about the overall magnetic topology at the magnetopause.

<http://space.umd.edu/seminars>

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