

M.Sc. Defense

Michael Barriault

DATE: Thursday, July 28, 2011

TIME: 9:00 AM

PLACE: MacNaughton 222

University of Guelph

THESIS TITLE:

**DYNAMICAL CONSTRAINT ENFORCEMENT IN
PLASMA ENVIRONMENTS**

ABSTRACT:

In certain plasma environments, such as that surrounding a pulsar, the electric and magnetic fields align orthogonally. In this document we discuss several constraints, of particular importance the force free constraint found in certain plasma environments. We showcase methods to enforce this constraint, first with a straightforward method then by a new, dynamical method. Finally we compare and contrast the two methods in an approximation of a small region above a pulsar.

EXAMINING COMMITTEE:

Chair: Martin Williams

Advisor: Luis Lehner

Advisory Committee Members: Eric Poisson, Rob Wickham