SUBJECT:	Ph.D. Proposal Presentation
BY:	Benjamin Black
TIME:	Tuesday, May 2, 2006, 2:30 p.m.
LOCATION:	Love Building, Room 109
TITLE:	Controlling a Passive Haptic Master During Teleoperation
COMMITTEE:	Dr. Wayne Book, Chair (ME) Dr. Kok-Meng Lee (ME) Dr. Aldo A. Ferri (ME) Dr. Lena H. Ting (BME) Dr. Julie A. Jacko (ISyE) Dr. Jeanne Falcon (National Instruments)

SUMMARY

The primary goal of the research proposed here is to develop a control scheme for passive haptic devices used as a master device during teleoperation. Haptic, or force-feedback devices can be divided into two groups based on the energetic nature of their actuators, either passive or active. The research here studies the passive devices, more specifically dissipative passive devices that use brakes to generate forces by removing energy from the system. As a whole, haptic devices have an ever growing list of applications that includes the remote control of another device, called teleoperation. The research proposed here will focus further on the use of passive haptic devices in teleoperation. Work thus far has applied a classic (active haptic) teleoperation control scheme to the system. The preliminary results show the shortcomings of the classic control when applied to a passive device, thereby highlighting the need for the development of a different control scheme. The end goal of the research will focus on the two aspects of the control scheme, the algorithm for calculating the haptic force and the actual force generation. A control scheme will be designed specifically to provide haptic feedback on a passive device. Further, the research will investigate and verify the limitations of force generation in a passive device. Without this verification, even the most robust algorithm for force calculation proves useless.