1010-35-102 **Matthias M Eller***, Department of Mathematics, Georgetown University, 37th & O Street NW, Washington, DC 20057. *An observability inequality for the anisotropic dynamic Maxwell system.*

In recent years a number of results have been obtained regarding the boundary contrallability of Maxwell's equations. All these results assume the system to be isotropic, i.e. the permeability and the permittivity coefficients are assumed to be scalar. In the isotropic case the analysis follows for a large part from boundary controllability results for the scalar wave equation. The reason is that the isotropic Maxwell equations can be reduced to a weakly coupled system of second order wave equations. In this talk we consider the anisotropic Maxwell equations, i.e. the permeability and the permittivity coefficients are assumed to be positive matrices. The equations of crystal optics are an example of an anistropic Maxwell system. An observability inequality for this system is proved by means of multipliers and trace eatimates. The observability inequality implies the exact boundary controllability of an electromagnetic field by a tangential current flux. The result is new even in the case of constant coefficients, but the results also hold for variable coefficients under an additional assumption. (Received August 22, 2005)