



THE UNIVERSITY OF CHICAGO

Departments of Mathematics and Statistics
ALGEBRAIC GEOMETRY SEMINAR

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Symmetric Output Feedback Control and Isotropic Schubert Calculus

WEDNESDAY, October 2, 2013, from 4:30–6:00 PM
312 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

One area of application of algebraic geometry has been in the theory of the control of linear systems. In a very precise way, a system of linear differential equations corresponds to a rational curve on a Grassmannian. Many fundamental questions about the output feedback control of such systems have been answered by appealing to the geometry of Grassmann manifolds. This includes work of Hermann, Martin, Brockett, and Byrnes.

Helmke, Rosenthal, and Wang initiated the extension of this to linear systems with structure corresponding to symmetric matrices, showing that for static feedback it is the geometry of the Lagrangian Grassmannian which is relevant.

In my talk, I will explain this relation between geometry and systems theory, and give an extension of the work of Helmke, et al. to linear systems with skew-symmetric structure. For static feedback, it is the geometry of spinor varieties which is relevant, and for dynamic feedback it is quantum cohomology and orbifold quantum cohomology of Lagrangian and orthogonal Grassmannians. This is joint work with Chris Hillar.

Organizers:

For further information on this event, please email Lek-Heng Lim at lekheng@galton.uchicago.edu or Madhav Nori at nori@math.uchicago.edu.

UCAGS Seminar URL: <http://www.stat.uchicago.edu/~lekheng/ag.html>