



THE UNIVERSITY OF CHICAGO

Departments of Mathematics and Statistics
ALGEBRAIC GEOMETRY SEMINAR

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Eigenvalues and Singular Values of Tensors

TUESDAY, October 9, 2012, from 4:30–6:00 PM
312 Eckhart Hall, 5734 S. University Avenue.

ABSTRACT

The eigenvalues (eigenvectors) and the singular values (singular vectors) of tensors can be defined naturally for real tensors as solutions of corresponding extremal problems of maximizing-minimizing certain polynomial and multilinear forms and finding best low rank approximation of tensors. To find the number of eigenvectors and singular vectors of tensors one needs to pass to complex tensors and use some basic tools of algebraic geometry: degree theory and top Chern numbers of corresponding vector bundles. To establish uniqueness of best rank one approximation, in particular for partially symmetric tensors, one needs to use some soft analysis and and some specific techniques. Some open problems will be presented. This talk will mostly based on joint work in progress with G. Ottaviani from U. Florence, and the recent preprint of the speaker <http://arxiv.org/abs/1110.5689>.

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>