



THE UNIVERSITY OF
CHICAGO

Departments of Mathematics and Statistics
ALGEBRAIC GEOMETRY SEMINAR

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Some Quantitative Results in Real Algebraic Geometry

SEMINAR MOVED TO APRIL 23, 2014

ABSTRACT

In this talk I will discuss two recent results on bounding the topological complexity of real semi-algebraic sets. The first result (joint with Sal Barone) aims at proving an analogue of the Bezout inequality for varieties defined over real closed fields. This result is motivated partly by the requirements of the new “polynomial partitioning” method recently introduced into discrete geometry by Guth and Katz. The second result (joint with Cordian Riener) is a polynomial bound (for fixed degrees) on the \mathfrak{S}_n -equivariant Betti numbers of symmetric semi-algebraic sets. The underlying leitmotif of the talk is to contrast the real and complex cases, and to point out important ways in which real algebraic geometry differs from complex algebraic geometry in certain respects. The talk is based on the results contained in the papers [arXiv:1303.1577 \[math.AG\]](https://arxiv.org/abs/1303.1577) and [arXiv:1312.6582 \[math.AG\]](https://arxiv.org/abs/1312.6582).

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>