

Department of Mathematics, BGU

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# Algebraic Geometry and Number Theory

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**On** *Wednesday, November ,30 2016*

**At** *15:10 – 16:30*

**In** *Math 101-*

Eli Shamovich (Technion)

will talk about

**Deformations of Hyperbolic Varieties**

Abstract:



**Ben Gurion University - Mathematics**  
**Algebraic Geometry and Number Theory Seminar**

*Speaker*    **Eli Shamovich (Technion)**  
*Title*        **Deformations of Hyperbolic Varieties**  
*Date*         Wednesday, 30 November 2016  
*Time*         15:10 - 16:30 (starts 15:10 sharp)  
*Location*    Room -101 in Building 58

*Abstract*     In this talk I will describe joint work with M. Kummer (Max Plank @ Leipzig) on deformations of real varieties, that are hyperbolic. In 1968 W. Nuij proved that the set of all real hyperbolic polynomials is connected and has a non-empty interior. His result was used in 2007 by J. W. Helton and V. Vinnikov to prove that every hyperbolic hypersurface is isotopic to a union of co-centric spheres if the degree is even and a union of cocentric spheres and a hyperplane if the degree is odd. In this talk I will demonstrate how one can generalize Nuij's results to real subvarieties of a projective space of higher codimensions. In particular our main result is that the locus of all hyperbolic varieties with fixed Hilbert polynomial is connected in the Hilbert scheme. I will also discuss hyperbolic smoothing of singularities and show some counterexamples that arise in the general case.

(updated 7 Nov 2016)