Geometry, Groups and Dynamics/GEAR Seminar
(held at the Illinois hub of GEAR)

12:00 pm Tuesday, March 14, 2017 in 243 Altgeld Hall

Mark Sapir (Vanderbilt and Illinois)

Flat submaps in CAT(0) (p,q)-maps and maps with angles

Abstract: This is a joint work with A. Olshanskii. Let p, q be positive integers with $1/p+1/q=1/2$. We prove that if a (p,q)-map M does not contain flat submaps of radius $\ge r$, then its area does not exceed $c(r+1)n$ where n is the perimeter of M and c is an absolute constant. Earlier Ivanov and Schupp proved an exponential bound in terms of r. We prove an estimate similar to Ivanov and Schupp for much more general ``maps with angles'' which include, for example, van Kampen diagrams over the presentation of the Baumslag-Solitar group $BS(1,2)$ and many groups corresponding to S-machines. We also show that a (p,q) map M tessellating a plane ${\mathbb R}^2$ has path metric quasi-isometric to the Euclidean metric on the plane if and only if M has only finitely many non-flat vertices and faces.

Video