

Fall 2009
University of Michigan-Department of Mathematics
<http://www.math.lsa.umich.edu/seminars/index.shtml>
Ann Arbor, MI 48109-1043
September 7th – September 13th

Monday, September 7

- 3:10-5:00pm **Group Theory/Lie Theory/Number Theory Seminar** --- Not meeting this week --- 4096 EH
4:10-5:00pm **Several Complex Variables and Complex Dynamics Seminar** --- Not meeting this week --- 3096 EH
4:10-5:00pm **Student Combinatorics** --- Not meeting this week --- 3866 EH
4:10-6:00pm **Geometry & Physics** --- Not meeting this week --- 4088 EH
5:15-6:30pm **Teaching Mathematics** --- Not meeting this week --- 3096 EH

Tuesday, September 8

- 2:10-3:00pm **"What is ... " Seminar** --- Not meeting this week --- 3096 EH
3:10-4:00pm **Student Geometry/Topology** --- Organizational Meeting --- 4096 EH
3:10-4:00pm **Algebra Seminar** --- Not meeting this week --- 3096 EH
4:10-5:00pm **Colloquium** --- Not meeting this week --- 1360 EH

Wednesday, September 9

- 3:10-4:00pm **Student Arithmetic Seminar** --- Organizational Meeting --- 3866 EH
4:10-6:00pm **Algebraic Geometry Seminar** --- Not meeting this week --- 3088 EH

Thursday, September 10

- 3:10-4:00pm **Commutative Algebra Seminar** --- Karl Schwede (UM) TBA --- 3096 EH
3:10-4:00pm **Topology Seminar** --- Alejandro Adem (U of British Columbia) *Homotopy Theory and Spaces of Representations* --- 4096 EH
4:10-5:00pm **Differential Equations** --- Not meeting this week --- 4088 EH
4:10-5:00pm **Financial/Actuarial Mathematics Seminar** --- Not meeting this week --- 3088 EH
4:10-5:00pm **Math Club** --- Not meeting this week --- 2nd floor Nesbitt Common Room

Friday, September 11

- 3:10-4:00pm **Applied and Interdisciplinary Mathematics Seminar** --- Jack Waddell (UM) Of *Tortoises and Hares: Slow versus fast dispersal in competitive population dynamics with fluctuations* --- 1084 EH
3:10-5:00pm **Geometry Seminar** --- Not meeting this week --- 3096 EH
4:10-5:00pm **Combinatorics** --- Not meeting this week --- 3866 EH

ABSTRACTS FOR THE WEEK OF SEPT. 7 – SEPT. 13, 2008

Topology Seminar
Thursday, September 10, 3:10-4:00pm
4096 EH
Alejandro Adem (U of British Columbia)
Homotopy Theory and Spaces of Representations

Using spaces of homomorphisms and the descending central series of the free groups, simplicial spaces are constructed for each integer $q > 1$ and every topological group G , with realizations $B(q, G)$ that filter the classifying space BG . In particular for $q=2$ this yields a single space $B(2, G)$ assembled from all the n -tuples of commuting elements in G .

Homotopy properties of the $B(q, G)$ will be described for finite groups, and cohomology calculations provided for compact Lie groups. Recent results on understanding both the number and stable homotopy type of the components of related spaces of representations will also be discussed.

Applied and Interdisciplinary Mathematics Seminar
Friday, September 11, 3:10-4:00pm
1084 EH
Jack Waddell (UM)
Of Tortoises and Hares: Slow versus fast dispersal in competitive population dynamics with fluctuations

Dispersal is an important strategy employed by populations to locate and exploit favorable habitats. The question arises: given a spatially heterogeneous landscape, what is the optimal rate of dispersal? Continuous population models predict that a species with a lower dispersal rate always drives a competing species to extinction in the presence of spatial variation of resources. However, the introduction of demographic fluctuations can reverse this conclusion. Competition between the exploitation of resources and fluctuations leads to victory by either the faster or slower of two species depending on the environmental parameters. A simplified model, analyzed by closing the moment and correlation hierarchy, quantitatively predicts which species will win under given parameters of spatial variation and average carrying capacity. This work was done with Leonard M. Sander and Charles R. Doering, and extends the work of Kessler and LMS (arXiv:0907.4386v1 [q-bio.PE]).