## Weekly Seminar & Events Bulletin
### March 29th, 2020 - April 4th, 2020

### Monday, March 30, 2020
- **3:00pm-3:50pm**  
  **Student Dynamics**  
  -- Alex Kapiamba (UM)  
  **TBA**  
  -- 3866 East Hall
- **4:10pm-5:00pm**  
  **Group, Lie and Number Theory**  
  -- Serin Hong (UM)  
  **CANCELLED**  
  -- 4096 East Hall

### Tuesday, March 31, 2020
- **3:00pm-5:00pm**  
  **Colloquium Series**  
  -- CRLT  
  CRLT (University of Michigan)  
  **CRLT**  
  -- 1360 East Hall
- **3:00pm-4:00pm**  
  **Student Geometry/Topology**  
  -- Yuping Ruan ()  
  **TBA**  
  -- 1866 East Hall
- **3:00pm-4:00pm**  
  **Student Algebraic Geometry**  
  -- Will Dana (UM)  
  **TBA**  
  -- B745 East Hall

### Wednesday, April 01, 2020
- **4:00pm-5:20pm**  
  **Algebraic Geometry**  
  -- Frank Sottile (Texas A&M)  
  **CANCELLED**  
  -- 4096 East Hall
- **4:00pm-5:30pm**  
  **RTG Seminar on Geometry, Dynamics and Topology**  
  -- Federico Rodriguez Hertz ()  
  **cancelled**  
  -- 3866 East Hall
- **4:00pm-5:00pm**  
  **Financial/Actuarial Mathematics**  
  -- Asaf Cohen (UM)  
  **On singular control problems, the time-stretching method, and the weak-M1 topology**  
  -- 1360 East Hall

### Thursday, April 02, 2020
- **3:00pm-4:00pm**  
  **Commutative Algebra**  
  -- Justin Lyle (University of Kansas)  
  **TBA**  
  -- 1866EH East Hall
- **4:00pm-5:00pm**  
  **Differential Equations**  
  -- Rishabh Gvalani (Imperial College, London)  
  **On the diffusive-mean field limit for weakly interacting diffusions exhibiting phase transitions**  
  -- 4088 East Hall

### Friday, April 03, 2020
- **3:00pm-3:00pm**  
  **Applied Interdisciplinary Mathematics (AIM)**  
  -- ()  
  **Cancelled**  
  -- 1084 East Hall
- **4:00pm-5:00am**  
  **Junior Colloquium Series**  
  -- Mel Hochster (University of Michigan)  
  **research at Michigan Series**  
  -- 3088 East Hall
- **4:00pm-5:00pm**  
  **Geometry**  
  -- John Ratcliffe (Vanderbilt)  
  **CANCELLED**  
  -- 3866 East Hall

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Abstracts for the week of March 29th, 2020 - April 4th, 2020

Student Dynamics
Monday, March 30, 2020, 3:00pm-3:50pm
3866 East Hall
Alex Kapiamba (UM)
TBA

Group, Lie and Number Theory
Monday, March 30, 2020, 4:10pm-5:00pm
4096 East Hall
Serin Hong (UM)
CANCELLED

Colloquium Series
Tuesday, March 31, 2020, 3:00pm-5:00pm
1360 East Hall
CRLT CRLT (University of Michigan)
CRLT

Student Geometry/Topology
Tuesday, March 31, 2020, 3:00pm-4:00pm
1866 East Hall
Yuping Ruan ()
TBA

Student Algebraic Geometry
Tuesday, March 31, 2020, 3:00pm-4:00pm
B745 East Hall
Will Dana (UM)
TBA
Algebraic Geometry
Wednesday, April 01, 2020, 4:00pm-5:20pm
4096 East Hall
Frank Sottile (Texas A&M)
CANCELED

RTG Seminar on Geometry, Dynamics and Topology
Wednesday, April 01, 2020, 4:00pm-5:30pm
3866 East Hall
Federico Rodriguez Hertz ()
cancelled

Financial/Actuarial Mathematics
Wednesday, April 01, 2020, 4:00pm-5:00pm
1360 East Hall
Asaf Cohen (UM)

On singular control problems, the time-stretching method, and the weak-M1 topology

We consider a general class of singular control problems with state constraints. Budhiraja and Ross (2006) established the existence of optimal controls for a relaxed version of this class of problems by using the so-called `time-stretching' method and the J1-topology. We show that the weak-M1 topology is better suited for establishing the existence, since it allows to bypass the time-transformations, without any additional effort. Furthermore, we reveal how the time-scaling feature in the definition of the weak-M1 distance embeds the time-stretching method's scheme. This case study suggests that one can benefit from working with the weak-M1 topology in other singular control frameworks, such as queueing control problems under heavy traffic.

Commutative Algebra
Thursday, April 02, 2020, 3:00pm-4:00pm
1866EH East Hall
Justin Lyle (University of Kansas)
TBA
Differential Equations  
Thursday, April 02, 2020, 4:00pm-5:00pm  
4088 East Hall  
Rishabh Gvalani (Imperial College, London)  
*On the diffusive-mean field limit for weakly interacting diffusions exhibiting phase transitions*

We analyse the statistical behaviour of a large number of weakly interacting diffusion processes evolving under the influence of a periodic interaction potential. We focus our attention on the combined mean field and diffusive (homogenisation) limits of the associated Fokker--Planck equation. In particular, we show that these two limits do not commute if the mean field system constrained to the torus undergoes a phase transition, that is to say if it admits more than one steady state. A typical example of such a system on the torus is given by the noisy Kuramoto model of mean field plane rotators (also known as the classical $XY$ model for continuous spin systems). As a by-product of our main results, we also analyse the energetic consequences of the central limit theorem for fluctuations around the mean field limit and derive optimal rates of convergence in relative entropy of the Gibbs measure to the (unique) limit of the mean field energy above the critical temperature.

Applied Interdisciplinary Mathematics (AIM)  
Friday, April 03, 2020, 3:00pm-3:00pm  
1084 East Hall  
()

*Cancelled*

Junior Colloquium Series  
Friday, April 03, 2020, 4:00pm-5:00am  
3088 East Hall  
Mel Hochster (University of Michigan)  
*research at Michigan Series*

CANCELLED
Let $S$ be a set and $k$ a positive integer such that $k$ is at most $|S|$. An action of a group $G$ on $S$ is called "$k$-transitive" if for every choice of distinct elements $x_1, \ldots, x_k$ of $S$ and every choice of distinct targets $y_1, \ldots, y_k$ in $S$, there is an element $g$ of $G$ such that $gx_i = y_i$ for each $i = 1, \ldots, k$. The term "transitive" means 1-transitive, and actions with $k > 1$ are called "multiply transitive".

This talk is concerned with cusped hyperbolic 3-manifolds of finite volume whose group of isometries induces a multiply transitive action on the set of cusps of the manifold. Roger Vogeler conjectured that there is a largest $k$ for which such $k$-transitive actions exist, and that for each $k > 2$, there is an upper bound on the possible number of cusps. Our proof of Vogeler's conjecture will be discussed in this talk.