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
### 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*
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.
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.