<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
</table>
| Monday, Nov 30 2020 | 11:00am-11:50am **Student Analysis** -- Han Le (University of Michigan) *Determinantal point processes and zeros of Gaussian analytic functions* -- Virtual East Hall  
|              | 4:00pm-5:00pm **Algebraic Topology** -- Po Hu (Wayne State University) *The coefficient of equivariant complex cobordism for primary cyclic groups* -- online Virtual  
|              | 4:00pm-5:00pm **Integrable Systems and Random Matrix Theory** -- Guido Mazzuca (SISSA) *Gaussian alpha ensemble and an application to Toda lattice* -- Zoom Meeting: 9161739235 Passcode: 651935 Virtual  
|              | 7:00pm-8:00pm **Student Math Finance** -- Xin Zhang (University of Michigan) *Displacement convexity and its application* -- https://umich.zoom.us/j/99487325343 Virtual  
| Tuesday, Dec 01 2020 | 5:00pm-6:00pm **Complex Analysis, Dynamics and Geometry** -- Alex Kapiamba (U(M)) *The (dis)continuity of quadratic filled Julia sets I* -- Virtual  
|              | 5:00pm-6:00pm **Student Combinatorics** -- Scott Neville () *The RSK algorithm for longest paths* -- Virtual  
| Wednesday, Dec 02 2020 | 3:00pm-4:00pm **Student Dynamics/Geometry Topology** -- Yueqiao Wu (University of Michigan) *TBA* -- Zoom link: https://umich.zoom.us/j/9409001254 Virtual  
|              | 3:00pm-4:00pm **MCAIM Colloquium** -- Josselin Garnier (Ecole Polytechnique, France.) *Passive imaging and communication* -- Zoom Meeting ID: 947 2346 1309. Zoom Link: https://umich.zoom.us/j/94723461309. Virtual  
|              | 4:00pm-5:00pm **Algebraic Geometry** -- Stefan Schreieder (Leibniz University Hannover) *Refined unramified cohomology and algebraic cycles* -- Zoom  
| Thursday, Dec 03 2020 | 3:00pm-4:00pm **Topology** -- Lei Chen (Caltech) *Actions of Homeo and Diffeo groups on manifolds* -- Virtual  
|              | 4:00pm-5:00pm **Differential Equations** -- Annalaura Stingo (UC Davis) *Almost-global well-posedness for 2d strongly-coupled wave-Klein-Gordon systems* -- Meeting ID: 983 6567 6067 Passcode: 2020 Virtual  
|              | 5:00pm-6:00pm **Student Commutative Algebra** -- Katie Waddle (University of Michigan) *TBA* -- Virtual  
| Friday, Dec 04 2020   | 11:00am-11:50am **Representation Stability** -- Andrew Snowden (UM) *K-L theory VI: Calculations in special cases* -- Online  
|              | 3:00pm-4:00pm **Student Algebraic Geometry** -- Jose Esparza Lozano () *Neron models* -- 3096 East Hall  
|              | 4:00pm-5:00pm **Preprint Algebraic Geometry** -- Devlin Mallory () *Subadditivity of Kodaira dimension does not hold in positive characteristic* -- Zoom East Hall  

http://www.math.lsa.umich.edu/seminars_events/ - Page 1/7
Student Analysis  
Monday, November 30, 2020, 11:00am-11:50am  
Virtual East Hall  
Han Le (University of Michigan)  
_Determinantal point processes and zeros of Gaussian analytic functions_

This talk aims to provide an introduction to determinantal point processes, which arise surprisingly often in random matrix theory, combinatorics and physics. We will first review notions such as point processes and their joint intensities, and then define determinantal processes. After discussing some basic properties, we will shift the focus on one particular example: the zeros of power series with independent complex Gaussian coefficients, and compare the results of this process to those of other classical processes.

Algebraic Topology  
Monday, November 30, 2020, 4:00pm-5:00pm  
online Virtual  
Po Hu (Wayne State University)  
_The coefficient of equivariant complex cobordism for primary cyclic groups_

The equivariant complex cobordism spectrum MU_G, where G is a compact Lie (or just finite) group, are highly interesting and central objects in equivariant stable homotopy theory. In this talk, I will give an explicit computation, in terms of generators and relations, of the coefficient ring of MU_G, in the case where G is a cyclic group whose order is a power of a prime. In particular, I will discuss certain divisibility conditions that arise in the structure of such coefficient rings.
Integrable Systems and Random Matrix Theory  
Monday, November 30, 2020, 4:00pm-5:00pm  
Zoom Meeting: 91617339235       Passcode: 651935 Virtual  
Guido Mazzuca (SISSA)  
Gaussian alpha ensemble and an application to Toda lattice

In my talk I will introduce a tridiagonal random matrix models related to the classical Gaussian $\beta$-ensemble in the high temperature regime, i.e. when the size $N$ of the matrix tends to infinity with the constraint that $\beta N = 2\alpha$ constant, $\alpha > 0$. I will show how to explicitly compute the mean density of states and the mean spectral measure for this ensemble. Finally, I will apply this result to compute the mean density of states for the periodic Toda lattice in thermal equilibrium.  
This talk is based on my recent preprint $\alpha\beta$-On the mean Density of States of some matrices related to the beta ensembles and an application to the Toda lattice$\alpha\beta$, arXiv preprint:2008.04604, and partly on a joint work with T.Grava, A. Maspero, and A. Ponno $\alpha\beta$-Adiabatic invariants for the FPUT and Toda chain in the thermodynamic limit$\alpha\beta$. Communications in Mathematical Physics, 380 (2020), pp. 811$\alpha\beta$, 851.  

Student Math Finance  
Monday, November 30, 2020, 7:00pm-8:00pm  
https://umich.zoom.us/j/99487325343  Virtual  
Xin Zhang (University of Michigan)  
Displacement convexity and its application

We will talk about McCann's displacement interpolation and its application to isoperimetric inequalities.

Complex Analysis, Dynamics and Geometry  
Tuesday, December 01, 2020, 5:00pm-6:00pm  
Virtual  
Alex Kapiamba (U(M))  
The (dis)continuity of quadratic filled Julia sets I

Associated to every polynomial is a compact subset of the complex plane, called the filled Julia set, which is a fundamental object in understanding they dynamics of that polynomial. Douady showed that when a polynomial without parabolic cycles is perturbed, the corresponding filled Julia sets vary continuously. Over the course to two talks we will examine this phenomenon. In the first talk we will give an introductory overview of the continuity of filled Julia sets and parabolic implosion, the obstruction to continuity caused by parabolic cycles. In the second talk we will discuss the space of compact sets which arise as limits of quadratic polynomials and ongoing efforts to describe its topology.
Student Combinatorics
Tuesday, December 01, 2020, 5:00pm-6:00pm
Virtual
Scott Neville ()
The RSK algorithm for longest paths

The Robinson-Schensted-Knuth correspondence gives a very concrete algorithm for converting a permutation into a pair of Young Tableaux, from which we can extract the longest increasing subsequence of the original permutation. Fulton and Viennot's Geometric construction gives a different algorithm for producing these Young Tableaux, without so many intermediate steps. Along the way, it converts longest increasing subsequence(s) into disjoint longest paths in $\mathbb{N}^2$ (the positive integer lattice). We will go over this alternative algorithm, enjoy some of its symmetries, and (time permitting) discuss how we might recover these longest disjoint paths.

Student Dynamics/Geometry Topology
Wednesday, December 02, 2020, 3:00pm-4:00pm
Zoom link: https://umich.zoom.us/j/94090012548 Virtual
Yueqiao Wu (University of Michigan)
TBA

MCAIM Colloquium
Wednesday, December 02, 2020, 3:00pm-4:00pm
Zoom Meeting ID: 947 2346 1309. Zoom Link: https://umich.zoom.us/j/94723461309. Virtual
Josselin Garnier (Ecole Polytechnique, France.)
Passive imaging and communication

In this talk we consider the propagation of waves transmitted by ambient noise sources. We discuss a generalized Helmholtz-Kirchhoff identity that derives from Green's identity and Sommerfeld radiation condition. The inspection of this identity makes it possible to design passive imaging methods, i.e., imaging methods using only passive receiver arrays and ambient noise illumination. More surprisingly, it is also possible to design an original passive communication scheme between two passive arrays that uses only ambient noise illumination. The passive transmitter array does not transmit anything but it is a tunable metamaterial surface that can modulate its scattering properties and encode a message in the modulation.

Zoom Link: Join Zoom Meeting:
https://umich.zoom.us/j/94723461309
Meeting ID: 947 2346 1309
Passcode: 618309
We introduce refined unramified cohomology. This notion allows us to give in arbitrary degree a cohomological interpretation of the failure of integral Hodge- or Tate-type conjectures, of l-adic Griffiths groups, and of the subgroup of the Griffiths group that consists of torsion classes with trivial transcendental Abel-Jacobi invariant. Our approach simplifies and generalizes to cycles of arbitrary codimension previous results of Bloch-Ogus, Colliot-Thélène-Voisin, Voisin, and Ma that concerned cycles of codimension two or three. We give several applications that indicate how this approach can be used to study algebraic cycles in concrete examples.

In this talk, I discuss the general question of how to obstruct and construct group actions on manifolds. I will focus on large groups like Homeo(M) and Diff(M) about how they can act on another manifold N. The main result is an orbit classification theorem, which fully classifies possible orbits. I will also talk about some low dimensional applications and open questions. This is a joint work with Kathryn Mann.
Differential Equations  
Thursday, December 03, 2020, 4:00pm-5:00pm  
Meeting ID: 983 6567 6067 Passcode: 2020 Virtual  
Annalaura Stingo (UC Davis)  
*Almost-global well-posedness for 2d strongly-coupled wave-Klein-Gordon systems*

In this talk we discuss the almost-global well-posedness of a wide class of coupled Wave-Klein-Gordon equations in 2+1 space-time dimensions, when initial data are assumed to be small and localized. The Wave-Klein-Gordon systems arise from several physical models especially related to General Relativity, but few results are know at present in lower space-time dimensions. Compared with prior related results, our novel contributions include a strong quadratic quasilinear coupling between the wave and the Klein-Gordon equation, and no restriction is made on the support of the initial data which are supposed to only have a mild decay at infinity and very limited regularity. Our proof relies on a combination of energy estimates localized to dyadic space-time regions, and pointwise interpolation type estimates within the same regions. This is akin to ideas previously used by Metcalfe-Tataru-Tohaneanu in a liner setting, and is also related to Alinhac's ghost weight method. A refinement of these estimates through different techniques will allow us to pass, in a future work, from almost global existence to global existence of solutions under the same hypothesis on the initial data. This is a joint work with M. Ifrim.

Student Commutative Algebra  
Thursday, December 03, 2020, 5:00pm-6:00pm  
Virtual  
Katie Waddle (University of Michigan)  
*TBA*

Representation Stability  
Friday, December 04, 2020, 11:00am-11:50am  
Online  
Andrew Snowden (UM)  
*K-L theory VI: Calculations in special cases*

Student Algebraic Geometry  
Friday, December 04, 2020, 3:00pm-4:00pm  
3096 East Hall  
Jose Esparza Lozano ()  
*Neron models*
Preprint Algebraic Geometry
Friday, December 04, 2020, 4:00pm-5:00pm
Zoom East Hall
Devlin Mallory ()

*Subadditivity of Kodaira dimension does not hold in positive characteristic*