Monday, January 06, 2020

4:10pm-5:00pm  **Group, Lie and Number Theory** -- Patrick Daniels (University of Maryland) *A Tannakian framework for displays and Rapoport-Zink spaces* -- 4088 East Hall

Wednesday, January 08, 2020

4:00pm-5:00pm  **Financial/Actuarial Mathematics** -- Ruoyu Wu (UM) *Mean field interaction on random graphs with dynamically changing multi-color edges* -- 1360 East Hall

Thursday, January 09, 2020

4:00pm-5:00pm  **Differential Equations** -- Shuang Miao (Wuhan University, China) *Stability of blow-up solutions to the energy-critical equivariant wave-map equation* -- 4088 East Hall

4:00pm-5:00pm  **Group, Lie and Number Theory** -- Alexander Bertoloni Meli (UC Berkeley) *The Local Langlands Correspondence and the Cohomology of Rapoport-Zink Spaces* -- 2866 East Hall
Abstracts for the week of January 5th, 2020 - January 11th, 2020

Group, Lie and Number Theory
Monday, January 06, 2020, 4:10pm-5:00pm
4088 East Hall
Patrick Daniels (University of Maryland)
A Tannakian framework for displays and Rapoport-Zink spaces

In this talk, we will present a Tannakian framework for group-theoretic analogs of Zink's displays, and we will explain how these correspond to formal p-divisible groups with additional structures. We use these G-displays to define a Rapoport-Zink functor which generalizes the purely group-theoretic one of Bueltel and Pappas, and we will explain how this construction recovers the classical one of Rapoport and Zink in the unramified EL-type situation.

Financial/Actuarial Mathematics
Wednesday, January 08, 2020, 4:00pm-5:00pm
1360 East Hall
Ruoyu Wu (UM)
Mean field interaction on random graphs with dynamically changing multi-color edges

We consider weakly interacting jump processes on time-varying random graphs with dynamically changing multi-color edges. The system consists of a large number of nodes in which the node dynamics depends on the joint empirical distribution of all other nodes and the corresponding edges, while the edge dynamics depends on the corresponding nodes. Asymptotic results, including law of large numbers, propagation of chaos, and central limit theorems, are established. In contrast to the classic McKean-Vlasov limit, the limiting system exhibits a path-dependent feature in that the evolution of a given particle depends on its own conditional distribution given its past trajectory. We also analyze the asymptotic behavior of the system when the edge dynamics is accelerated. A law of large number and a propagation of chaos result is established, and the limiting system is given as independent McKean-Vlasov processes. Errors between the two limiting systems, with and without acceleration in edge dynamics, are also analyzed.

Joint work with Erhan Bayraktar
In 2008, Krieger, Schlag and Tataru constructed a family of type II blow up solutions to the 2+1 dimensional wave map equation with unit sphere as its target. A key feature of this family is that it exhibits a continuum of blow up rates. However, from its construction, the stability of this family was not clear. In this talk, I will present our work in which the stability of this family is proved within the equivariant framework. This is based on joint work with Joachim Krieger.

The connection between the cohomology of Rapoport-Zink spaces and the local Langlands correspondence has been considered by many authors. In particular, a conjecture of Kottwitz describes the supercuspidal part of the cohomology in terms of the Langlands correspondence. In this talk, we show how to extend this conjecture in the general linear case to more general representations and discuss its proof.