The AMS Student Chapter at SIUC is organizing the **Student Seminar Series** on **Fridays at 4:00 pm** for all graduate students. This series is to be run by the students, for the students; providing a platform for us to practice speaking in a friendly environment. The topics can be anything and everything including what we are currently researching or any topic that interests us immensely.

All the graduate students are invited to **participate either by giving a talk or by being present at this seminar**. If you are participating in an important seminar, you can take this opportunity as a practice session.

- **February 18, 2022**
  - **Speaker**: Gabriel Ngwe
  - **Title**: Skorokhod Spaces and Stochastic Processes
  - **Date**: 02-18-2022
  - **Time**: 4:00 - 5:00 pm
  - **Place**: Neckers 156
  - **Abstract**: Let $D$ denote the space of real-valued functions on $[0,1]$ that are right-continuous and have left limits. Equipping $D$ with the Skorokhod metric induces the Skorokhod topology used in the theory of stochastic processes. We present an overview of Skorokhod spaces and discuss their application to probability theory.

- **February 4, 2022**
  - **Speaker**: Roshini Samanthi Gallage
  - **Title**: Analysis of Nonlinear Stochastic Differential Delay Equations
  - **Date**: 02-04-2022
  - **Time**: 4:00 - 5:00 pm
  - **Place**: Neckers 156
  - **Abstract**: We show the existence of a unique solution of certain nonlinear stochastic differential delay equations (SDDEs) with continuously distributed delay which satisfy the local Lipschitz condition but not the linear growth condition. In this study, we have established sufficient conditions on the coefficients to avoid the explosion and extinction in a finite time. Further, we show that Euler-Maruyama numerical approximations of such nonlinear SDDEs converge in probability to their exact solutions. (Joint work with Dr. Harry Randolph Hughes)

- **November 19, 2021**
  - **Speaker**: Menake Wijerathne, SIUC
  - **Title**: On supersingular representations of $GL(2,\mathbb{D})$ over a p-adic field.
  - **Date**: 11-19-2021
  - **Time**: 4:00 - 5:00 pm
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Place: Neckers 410
Abstract: In this study we will obtain a standard basis for the pro-p-Iwahori invariant subspace of the supersingular representations of GL(2, D), where D is a finite dimensional central F-division algebra over Qp.

- **November 12, 2021**
  Canceled due to school holiday.

- **November 5, 2021**
  **Speaker:** Porter Summers, *SIUC*
  **Title:** Reducibility of p-adic principal series representations of p-adic group
  **Date:** 11-05-2021
  **Time:** 4:00 - 5:00 pm
  **Place:** Neckers 410
  **Abstract:** We will define p-adic principal series representations and discuss the question of reducibility. In the process we explore the structure of reductive groups, Iwasawa modules, and the role of Schneider-Teitelbaum duality in studying p-adic Banach space representations.

- **October 29, 2021**
  **Speaker:** Dr. Layla Sorkatti, *University of Khartoum and Al-Neelain University*
  **Title:** Quaternion algebras
  **Date:** 10-29-2021
  **Time:** 4:00 - 5:00 pm
  **Place:** Neckers 410
  **Abstract:** We prove that there are exactly 3 normed R-algebras. These are R, C and H. We then see, as an application that, every natural number can be written as a sum of 4 integer squares. We end up by generalising the Hamilton’s quaternions to some other type of quaternion algebras.

- **October 22, 2021**
  **Speaker:** Gihanee Senadheera, *SIUC*
  **Title:** Effective Concept Classes of PACi/PAC, Incomparable Degrees and Jump Structure
  **Date:** 10-22-2021
  **Time:** 4:00 - 5:00 pm
  **Place:** Neckers 410
  **Abstract:** The Probably Approximately Correct (PAC) learning is a machine learning model introduced by Leslie Valiant in 1984. The PACi reducibility refers to the PAC reducibility independent of size and computation time. This reducibility in PAC learning resembles the reducibility in Turing computability. In 1957 Friedberg and Muchnik independently solved the Post problem by constructing computably enumerable sets A
and B of incomparable degrees using the priority construction method. We adapt this idea to \( \text{PACi}/\text{PAC} \) reducibilities and construct two the effective concept classes \( C_0 \) and \( C_1 \) such that \( C_0 \) is not reducible to \( C_1 \) and vice versa. When considering \( \text{PAC} \) reducibility it was necessary to work on the size of an effective concept class, thus we use Kolmogorov complexity to obtain the size. Analogous to Turing jump, we give a jump structure on effective concept classes. As the future work, we begin to explore an embedding of structures from \( \text{PAC} \) degrees to \( 1-1 \) degrees or Turing degrees.