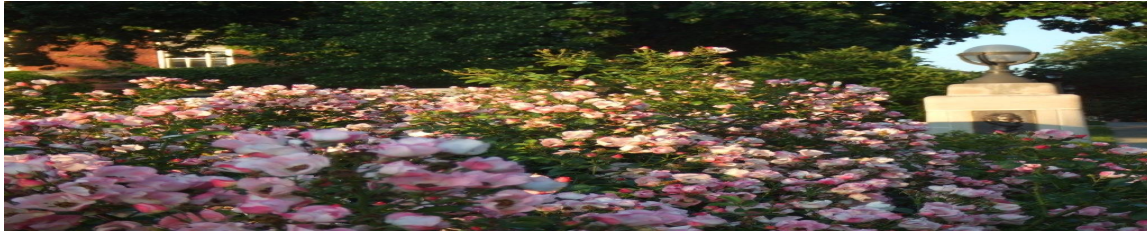


ISU ALGEBRA SEMINAR



FALL 2016 SCHEDULE

Wednesdays, 11:00 AM-11:50 AM at Williams Hall, room 21
Refreshments will be provided.

October 12, 2016

Speaker: Amita Malik (UIUC)

Title: p-adic properties of Sporadic Apéry like numbers

Abstract: At the ICM in 1978, R. Apéry presented a proof of the irrationality of $\zeta(3)$. In this proof, he introduced a sequence of integers, now known as Apéry sequence. Apéry-like numbers are special integer sequences, studied by Beukers and Zagier, which are modeled after Apéry numbers. Among their remarkable properties are connections with modular forms, Calabi-Yau differential equations, and a number of p-adic properties, some of which remain conjectural. A result of Gessel shows that Apéry's sequence satisfies Lucas congruences. We prove corresponding congruences for all sporadic Apéry-like sequences. While, in some cases, we are able to employ approaches due to McIntosh, Samol-van Straten and Rowland-Yassawi to establish these congruences, there are few others for which we require a finer analysis. As an application, we investigate modulo which numbers these sequences are periodic. In particular, we show that the Almkvist-Zudilin numbers are periodic modulo 8, a special property which they share with the Apéry numbers. This is joint work with Armin Straub.

