

# Philadelphia Area Number Theory Seminar

**John Bergdall**  
Bryn Mawr College

## Constant slope problems for $p$ -adic families of modular forms

**Abstract:** The purpose of this talk is to discuss two related problems about modular forms. The first is a conjecture stated by Gouvêa and Mazur in the early 1990's. Their conjecture aims to predict a specific local constancy result for the multiplicity of (the  $p$ -adic norm of) a certain Hecke eigenvalue appearing in spaces of modular forms, as the weight varies. (Caveat: their conjecture was disproven!) Their conjecture was an attempt to nail down the as-of-then undiscovered general theory of  $p$ -adic modular forms. Later, Coleman proved families of  $p$ -adic modular forms exist as  $q$ -expansions converging on  $p$ -adic discs. The second problem, a variation of the Gouvêa-Mazur conjecture, is to ask for the radius of convergence of a given family. Our discussion will highlight new results on this second problem, but we will start by making precise both problems.

Wednesday, February 13, 2019  
2:40 – 4:00 PM

Bryn Mawr College  
Department of Mathematics  
Park Science Center **328**

Tea and refreshments at 2:20PM in Park 361