

*Department of Mathematics,
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Math 209 - Number Theory

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Congruences, modular forms and graphs

Abstract:

The theory of congruences of modular forms is a central topic in contemporary number theory. Congruences between modular forms play a crucial role in understanding links between geometry and arithmetic: cornerstone example of this is the proof of Serre's modularity conjecture by Khare and Wintenberger. Congruences of Galois representations govern many kinds of representations of the absolute Galois group of number fields. Even though our understanding is improving, many aspects remain very mysterious, some are theoretically approachable, many are not; and amongst the latter, some allow numerical studies to reveal first insights. In this talk I will introduce congruence graphs, which are graphs encoding congruence relations between classical newforms. Then I will explain first how to construct analogous graphs for congruences of Galois representations, and then how to use these graphs to study questions regarding Hecke algebras and Atkin-Lehner operators.

Special Note:

There will be a pre-talk from 1:20-1:50pm.

Host: Kiran Kedlaya

Thursday, June 14, 2018

2:00 PM

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