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Title: *Canonical generators of the function field on Atkin-Lehner groups and applications to explicit class field theory*

Abstract: We describe a method to construct canonical generators of the function field of meromorphic functions on Atkin-Lehner groups of a squarefree level  $N$ . When the genus is zero, there is one generator of the function field, the Hauptmodul, and the singular moduli problem is well studied. For genus one levels, we prove that values of generators at all CM points are algebraic integers which we are able to understand in the context of explicit class field theory and use to construct minimal polynomials for some class fields (and subfields) depending on the level. We end the talk with the description of a procedure which is expected to yield generators of class fields, and certain subfields, and does not use either modular polynomials or Shimura reciprocity; instead it is based on properties of the Schwarzian derivative of generators evaluated at CM points fixed by elliptic elements of the group. This work is joint with Jay Jorgenson and Holger Then.