

## **Finiteness of Teichmueller curves in genus three**

Matthew Bainbridge, Indiana University

A Teichmueller curve is an algebraic curve in  $M_g$  (the moduli space of genus  $g$  Riemann surfaces) which is isometrically immersed with respect to the Teichmueller metric. Such a curve is said to be algebraically primitive if the trace field of its uniformizing group has degree  $g$ .

There are infinitely many examples of algebraically primitive Teichmueller curves in  $M_2$ , constructed independently by McMullen and Calta, but it has been an open question for a while whether there can be infinitely many such curves in  $M_g$  for any larger  $g$ .

In this talk, I'll discuss the recent theorem that there are only finitely many algebraically primitive Teichmueller curves in  $M_3$ . This is joint work with Philipp Habegger and Martin Moeller.