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*Good and Bad Reduction of Dynatomic Modular Curves*

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**Abstract:** The dynatomic modular curves parameterize one-parameter families of dynamical systems on  $P^1$  along with periodic points (or orbits). These are analogous to the standard modular curves parameterizing elliptic curves with torsion points (or subgroups). For the family  $x^2 + c$  of quadratic dynamical systems, the corresponding modular curves are smooth in characteristic zero. We give several results about when these curves have good/bad reduction to characteristic  $p$ , as well as when the reduction is irreducible. These results are motivated by uniform boundedness conjectures in arithmetic dynamics, which will be explained.

(This is joint work with John Doyle, Holly Krieger, Rachel Pries, Simon Rubinstein-Salzedo, and Lloyd West.)

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