

1125-11-1193

**John R. Doyle\*** ([john.doyle@rochester.edu](mailto:john.doyle@rochester.edu)), Department of Mathematics, University of Rochester, Rochester, NY 14627. *Dynamical modular curves for quadratic polynomial maps*. Preliminary report.

Given a polynomial  $\phi$  of degree  $d \geq 2$  defined over a number field  $K$ , the set of  $K$ -rational preperiodic points for  $\phi$  comes naturally equipped with the structure of a directed graph  $G(\phi, K)$ . Given an abstract directed graph  $G$ , one might ask whether there exists a polynomial  $\phi \in K[z]$  such that  $G(\phi, K)$  contains a subgraph isomorphic to  $G$ . We will discuss the case of quadratic polynomials, where the appropriate moduli space for this problem is an algebraic curve — a dynamical analogue of the classical modular curves for torsion points on elliptic curves. We will briefly describe these dynamical modular curves and some of their properties, and we will discuss various applications, including results toward a dynamical version of Merel's uniform boundedness theorem. (Received September 15, 2016)