

**Mike Keane**

**Coefficient dynamics**

**Abstract:** An old idea going back to Lagrange concerning the representation of numbers by means of the equations they satisfy is combined with the dynamics of a few number-theoretic maps, notably the continued fraction transformation. This yields a simple derivation of the invariant measure discovered by Gauss in 1799, an intuitive understanding of the ergodic properties of this dynamical system, a proof of the Lagrange periodicity theorem, and some advances in the study of normality of expansions of algebraic integers. In particular, we advance a dynamical conjecture which, if true, would show that algebraic integers of degree greater than two do not have bounded partial quotients.