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Jon Jacobsen* (jacobsen@math.hmc.edu), Math Department, Harvey Mudd College, Claremont, CA 91711, and **Brad Tennis** (btennis@stanford.edu) and **Owen Lewis** (owen.lewis@gmail.com). *Approximations of Continuous Newton's Method & Cayley's Problem.*

Continuous Newton's Method refers to a certain dynamical system whose associated flow generically tends to the roots of a given polynomial. An Euler approximation of this system, with step size $h = 1$, yields the discrete Newton's method algorithm for finding roots. In this talk we contrast Euler approximations with several different approximations of the continuous ODE system and, using computer experiments, consider their impact on the associated fractal basin boundaries of the roots. (Received September 07, 2006)