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**Rafe Jones\*** (rjones@holycross.edu), College of the Holy Cross, Worcester, MA 01610. *Critical orbits in arithmetic dynamics.*

In real and complex dynamics, the critical orbit of a quadratic polynomial lives up to its billing as “critical”, since its properties determine global dynamical behavior to a large extent. In arithmetic dynamics, a similar statement turns out to hold: the critical orbit gives information about arithmetic properties of all integer orbits. This occurs because the critical orbit controls the ramification in field extensions generated by preimages of zero. In this talk I’ll discuss this link and give some cases where one can prove results about the arithmetic of all integer orbits. I’ll also briefly review results from the real and complex settings, in particular how the Mandelbrot set illustrates the dependence of global complex dynamics on the critical orbit. (Received February 02, 2009)