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Abstract: The “echo” phenomenon is ubiquitous in many areas of physics. A particle beam echo is a phenomenon in accelerator physics where, when the particle beam is pulsed with two types of magnets in a calculated way, a spontaneous and pronounced amplification in the beam centroid signal appears for a brief time. This study is a continuation of previous efforts to demonstrate the possibility of observing electron beam echoes in the IOTA synchrotron ring at Fermilab. Formally, beam echoes are produced by pulsing the beam with a dipole magnet followed by a single pulse by a quadrupole magnet. In this study, we seek to use multiple quadrupole pulses to generate an echo larger than that from a single kick. We use beam echo theory and simulations to model and predict the expected echo generated by multiple quadrupole pulses. We also run simulated scans over various parameters relevant to the echo to maximize the echo amplitude. Effects due to quantum excitation and synchrotron damping (which are particularly relevant with electrons) were also considered in simulation. Our findings show that, given a quadrupole pulse of sufficient strength, we should expect to be able to measure electron beam echoes in the IOTA ring.