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Prolonging Electron Emission in Pyroelectric Crystal Accelerators STEPHEN SHAFROTH, ANYA DERBAKOVA, VISHAL RAO, KUAI YU, University of North Carolina at Chapel Hill — Pyroelectric crystal accelerators have been used to accelerate electrons which produce X-rays on interacting with matter and are commercially available (Amptek). They have also been used to accelerate positive ions such as deuterons, which when colliding with deuterium targets produce nuclear fusion, giving rise to fast neutrons and protons. A problem with these crystal accelerators is that as the crystal temperature changes, particularly for fast temperature changes, the emission rate increases too fast and produces a discharge before the surface charge can build up sufficiently to accelerate ions or electrons to the highest energies. To address this problem we have developed LabView vi's which allow crystal heating rate and ambient pressure to be controlled. Electron emission has been recorded for about one hour without a discharge.

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