

Abstract Submitted  
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**Driving electronics for a z-positioner in a new SPM design.**<sup>1</sup> LEU-JEN CHEN, SEONG HEON KIM, ALEX DE LOZANNE, Department of Physics, University of Texas at Austin — We use a modified Pan-type walker as the z coarse approach mechanism in our new SPM design. We developed new electronics for driving and exercising the walker with the main circuit consisting of six 12V relays. Connecting the relays in series produces a timing cascade due to the mechanical delay in each relay. The traditional slow linear ramp has been replaced with the charge and discharge behavior of the RC circuits, where C is the capacitance of the piezoelectric plates. Initial tests with a 6Hz frequency input showed 10 nm step size and a 3 millimeter range. A single 555 timer serves as our frequency generating source. A highly stabilized square wave can be generated in its monostable mode, with the output frequency determined by two external resistors and a capacitor. We also replace the high voltage supply with a voltage quadrupler circuit that is compact and inexpensive, with 64V and 128V DC output in the final configuration.

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