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Current-Driven Phase Oscillation and Domain-Wall Propagation in $\mathbf{W}_x\mathbf{V}_{1-x}\mathbf{O}_2$ Nanobeams ABRAM FALK, QIAN GU, JUNQIAO WU, LIAN OUYANG, HONGKUN PARK, Harvard University — We report the observation of a current-driven metal (M)-insulator (I) phase oscillation in two-terminal devices incorporating individual $W_xV_{1-x}O_2$ nanobeams connected in parallel with a shunt capacitor. The phase oscillation frequency reaches above 5 MHz for $\sim$1-μm-long devices. The M-I phase oscillation coincides with the charging/discharging of the capacitor and occurs through the axial drift of a single M-I domain wall driven by Joule heating and the Peltier effect.

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