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Ultrahigh Vacuum Terahertz Scanning Tunneling Microscope

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The terahertz scanning tunneling microscope (THz-STM) is a new system for ultrafast imaging of surfaces at the nanoscale. Previous experiments have shown a spatial resolution of 2 nm and temporal resolution of 500 fs under ambient conditions. Currently, the THz-STM is being developed for operation in ultrahigh vacuum. The challenges involved with operating in a vacuum environment, simulations of a terahertz pulse coupling to an STM tip, and progress towards atomic resolution with THz-STM will be discussed.

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