Title	Ultrafast Electron Pulses from a Tungsten Tip Triggered by Low-Power Femtosecond Laser Pulses
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Abstract	We present an experimental and numerical study of electron emission from a sharp tungsten tip triggered by sub-8-fs low-power laser pulses. This process is nonlinear in the laser electric field, and the nonlinearity can be tuned via the dc voltage applied to the tip. Numerical simulations of this system show that electron emission takes place within less than one optical period of the exciting laser pulse, so that an 8 fs 800 nm laser pulse is capable of producing a single electron pulse of less than 1 fs duration. Furthermore, we find that the carrier-envelope phase dependence of the emission process is smaller than 0.1% for an 8 fs pulse but is steeply increasing with decreasing laser pulse duration.
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