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Title:Terahertz pinch harmonics enabled by single nano rods
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Abstract:A pinch harmonic (or guitar harmonic) is a musical note produced by lightly pressing the thumb of the picking hand upon the string immediately after it is picked [J. Chem. Educ. 84, 1287 (2007)]. This technique turns off the fundamental and all overtones except those with a node at that location. Here we present a terahertz analogue of pinch harmonics, whereby a metallic nano rod placed at a harmonic node on a terahertz nanoresonator suppresses the fundamental mode, making the higher harmonics dominant. Strikingly, a skin depth-wide nano rod placed at the mid-point turns off all resonances. Our work demonstrates that terahertz electromagnetic waves can be tailored by nanoparticles strategically positioned, paving important path towards terahertz switching and detection applications.
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