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Title:Focused terahertz radiation formed by coherently scattered surface plasmon polaritons from partially uncorrugated metal surfaces

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Abstract:We present that a focus of terahertz radiation can be tailored based on coherent scattering of surface plasmon polaritons (SPPs) from a partially defected metal corrugation based on numerical simulations. The introduction of teeth defects in the corrugation allows coupling of the guided SPPs with the radiation and the far-field behavior is tailored by the spatial arrangement of such defects. The proposed structures serve as a kind of planar lenses which are quite thin and inexpensive. Promising applications include interfacing lens antennas between terahertz plasmonic integrated circuits and the external free space, which make terahertz systems very compact and low-cost.

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