

## Geometrically induced plasmonics from the optical to the terahertz regime

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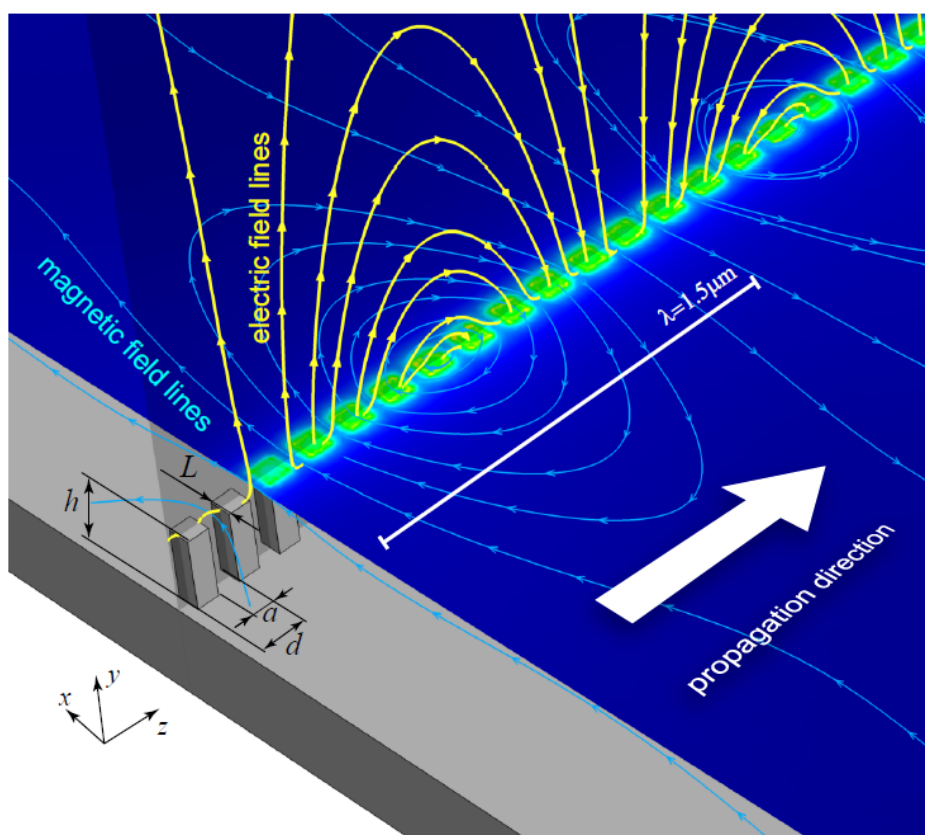
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We demonstrate that the introduction of a subwavelength periodic modulation into a metallic structure strongly modifies the guiding characteristics of the surface plasmon polariton (SPP) modes supported by the system [1]. Moreover, it is also shown how a periodic corrugation could even create a new type of SPP-type mode, a domino plasmon polariton (DPP), Fig.1, in a structure that does not support surface plasmons in the non-corrugated configuration. We present a totally new design for surface plasmon polariton waveguides based on DPP for terahertz applications, which is easy to fabricate [2]. These waveguides are likely to enable interesting device applications stemming from their unique properties: a dispersion that is nearly insensitive to the waveguides' width, a nearly flat power distribution within the waveguide, an excellent field confinement factor, and reasonable loss figures.

### References

[1] M. L. Nesterov, D. Martin-Cano, A. I. Fernandez-Dominguez, E. Moreno, L. Martin-Moreno, and F. J. Garcia-Vidal, *Optics Letters* **35**, (2010), 423.

[2] D. Martin-Cano, M. L. Nesterov, A. I. Fernandez-Dominguez, F. J. Garcia-Vidal, L. Martin-Moreno, and Esteban Moreno, *Optics Express* **18**, (2010), 754.



**Fig. 1.** Domino plasmon polariton field distribution.