

Plasmonic resonances and excitation-free modes on Platonic solids

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In this presentation we will discuss the usage of Theory of Characteristic Modes (TCM) applied for the case of sub wavelength plasmonic scatterers [1]. In particular, we investigate the plasmonic effects of the five regular polyhedra, known as the Platonic solids, i.e., the tetrahedron, hexahedron, octahedron, dodecahedron, and icosahedron [2]. Numerical results reveal scattering peculiarities on their spectrum and a brief discussion regarding the electrostatic response will be presented.

The key features of this study suggest that there is a strong correlation between the sharpness of the vertex angle and the position of the main dipole response [2]. In this sense a solid-vertex hierarchical categorization is proposed, being in contrast with the edge hierarchy observed for the case of electrostatic resonances on dielectric targets [3].

References

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