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Study on electrostatic resonance of nanoprisms with sharp corners WAI SOEN CHAN, KA KI NG, KIN WAH YU, Department of Physics, The Chinese University of Hong Kong — We have studied the electrostatic resonance of metal nanoprisms with sharp corners numerically. We consider an infinite metal cylinder with polygonal base, e.g. square. The incident electric field lies in the plane of cross-section of the cylinder. Yu and co-workers proposed Green's function formalism (GFF) to numerically calculate the electric potential and field distribution in plasmonic systems. We will adopt the scheme to demonstrate the effect of sharp corners, particularly on the effect of electrostatic resonance spectrum, as in the spectral analysis proposed by Bergman and Milton. Hetherington and Thorpe investigated the conductivity of a sheet containing dilute inclusion with sharp corners, they made use of a conformal mapping approach to calculate the conductivity from circular inclusions. Helsing, McPhedran and Milton also investigated the optical properties of a metamaterial lattice with inclusions having sharp corners. We study the possibility of improving numerical accuracy by combining the conformal mapping approach and GFF. We may extend similar approach to investigate the properties of plasmonic systems, for examples nanobodies and nanostars.

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