

Abstract Submitted  
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**Electrostatic resonances and optical responses of cylindrical clusters**<sup>1</sup> CHUN WING CHOY, The Chinese University of Hong Kong, J. J. XIAO COLLABORATION, K. W. YU COLLABORATION — We develop a Green function formalism (GFF) for computing the electrostatic resonance in clusters of cylindrical particles. In the GFF, we take advantage of a surface integral equation to avoid matching the complicated boundary conditions on the surfaces of the particles. Numerical solutions of the eigenvalue equation yield a pole spectrum in the spectral representation. The pole spectrum can in turn be used to compute the optical response of these particles. For two cylindrical particles, the results are in excellent agreement with the exact results from the multiple image method and normal mode expansion method. The results of this work can be extended to investigate the enhanced nonlinear optical responses of metal-dielectric composites, as well as optical switching in plasmonic waveguides.

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