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**Scalar Wave Propagation Through a Nano-hole** N.J.M. HORING, D. MIESSEIN, Stevens Institute of Technology, J.D. MANCINI, Kingsborough College of CUNY — In this work, an integral equation is formulated which describes scalar wave transmission through a nano-hole on a plasmonic sheet in terms of the Green's function for the associated Helmholtz problem. Taking the radius of the nano-hole to be the smallest length parameter of the system, we obtain an exact solution of the integral equation for the Green's function analytically and in closed form. The Green's function is then applied to the analysis of wave transmission through the nano-hole.

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