

# Calculation, normalization, and perturbation of quasinormal modes in coupled cavity-waveguide systems

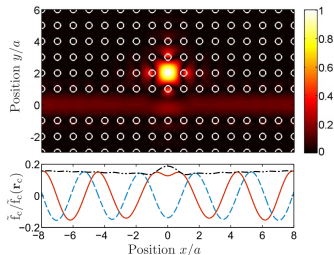
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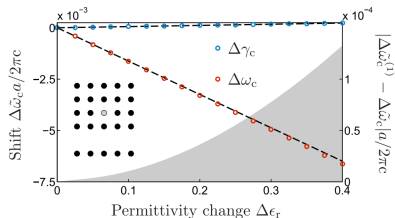
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$$\Delta \tilde{\omega}_c^{(1)} = -\frac{\tilde{\omega}_c}{2\langle \tilde{\mathbf{f}}_c | \tilde{\mathbf{f}}_c \rangle} \int_V \Delta \epsilon_r(\mathbf{r}) \tilde{\mathbf{f}}_c(\mathbf{r}) \cdot \tilde{\mathbf{f}}_c(\mathbf{r}) d\mathbf{r},$$



23. G. H. Hardy, *Divergent Series* (Oxford at the Clarendon Press, 1949).