

$$P(\mathbf{r}, \omega) = |\phi_n(\omega)|^2 \sum_{\mu, \nu} \exp [i(\mathbf{k}_\mu - \mathbf{k}_\nu) \cdot \mathbf{r}] \left( \mathbf{M} \mathbf{M}^\dagger \right)_{\mu \nu}$$