

Networks as Coherent Perfect Absorbers

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Absorbers in systems with coherent wave propagation always introduce some back scattering which prevents the complete absorption of incident energy. However, in systems with multiple scattering and precise control over the incoming wave, coherent perfect absorption (CPA) can be achieved for specific wave numbers. We study this phenomenon in wave chaotic systems and develop a statistical description for CPA based on random matrix and perturbation theory. As a concrete numerical example with a potential experimental realization we study quantum graphs where the absorption is concentrated in some of the vertices of the network.

References

H. Li et al.: Phys. Rev. Lett. 118 (2017) 044101.