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Bands of localized electromagnetic waves in random collections of dielectric particles

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Abstract: Anderson localization of electromagnetic waves in random arrays of dielectric cylinders is studied. An effective theoretical approach based on the finite size scaling analysis of transmission is developed. The disordered dielectric medium is modeled by a system of randomly distributed 2D electric dipoles. The appearance of the band of localized waves emerging in the limit of an infinite medium is discovered. It suggests deeper insight into existing experimental and theoretical results.



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