

Abstract Submitted
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Singular Behavior of Electronic Eigenstates in the Anderson Model of Localization¹ SONIKA JOHRI, Department of Electrical Engineering, Princeton University, Princeton, NJ 08544, R.N. BHATT, Department of Electrical Engineering and Princeton Center for Theoretical Science, Princeton University, Princeton, NJ 08544 — We report the observation of a singularity in the electronic properties of the Anderson Model of Localization with diagonal disorder² which is clearly distinct from the well- established mobility edge (localization-delocalization transition)^{3,4} that occurs in dimensions $d > 2$. We present results of numerical calculations for various disorder distributions in dimensions $d = 1, 2$ and 3 , of different properties of the electronic wavefunctions to establish this, and to understand its evolution with disorder distribution, dimension and lattice type. Our data suggest that the model is richer than has been originally believed.

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²P. W. Anderson, *Physical Review* **109**, 1492 (1958).

³E. Abrahams, P. W. Anderson, D. C. Licciardello and T. V. Ramakrishnan, *Physical Review Letters* **42**, 673 (1979).

⁴For a recent review on Anderson Localization, see Ferdinand Evers and Alexander D. Mirlin, *Reviews of Modern Physics* **80**, 1355 (2008).

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