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**Mechanism of multifractal spectrum termination at the Anderson metal-insulator transition** MATTHEW FOSTER, Columbia University, SHINSEI RYU, University of California, Berkeley, ANDREAS LUDWIG, University of California, Santa Barbara — We revisit the problem of wavefunction statistics at the Anderson metal-insulator transition (MIT) of non-interacting electrons in $d > 2$ spatial dimensions. At the transition, the complex spatial structure of the critical wavefunctions is reflected in the non-linear behavior of the multifractal spectrum of generalized inverse participation ratios (IPRs). For sufficiently large moments of the wavefunction intensity, the spectrum obtained from a *typical* wavefunction associated to a particular disorder realization differs markedly from that obtained from the *disorder-averaged* IPRs—the phenomenon known as the termination of the multifractal spectrum. We provide a derivation for the termination of the typical multifractal spectrum, by fusing the non-linear sigma model framework, conventionally used to access the MIT in $d = 2+\epsilon$ dimensions, with a functional renormalization group (FRG) methodology. The FRG was previously used to demonstrate the termination of the multifractal spectrum in a very special model of 2D Dirac fermions, subject to a particular type of quenched disorder. [D. Carpentier and P. Le Doussal, Phys.Rev. E **63**, 026110 (2001)]. Our result shows that the FRG framework can be generalized to the much broader context of the delocalization transition of ordinary electrons in higher dimensions.

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