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Unstable Domain-Wall Solution in the Metal-Mott Insulator Coexisting Regime TSUNG-HAN LEE, VLADIMIR DOBROSAVLJEVIC, Florida State University and National High Magnetic Field Laboratory, JAKSA VUCICEVIC, DARKO TANASKOVIC, Institute of Physics Belgrade, Serbia, EDUARDO MIRANDA, Campinas State University, Brazil — We employ Dynamical Mean Field Theory (DMFT) with multidimensional optimization (Conjugate Gradient and Broyden method) to investigate the transport properties of the unstable solution in the Mott metal-insulator coexisting regime. Physically, this solution is expected to describe the properties of the domain wall separating the metallic and the Mott-insulating regions in a spatially inhomogeneous case. We show that the multidimensional optimization can efficiently converge not only to the local minima of the free energy, describing the two coexisting phases, but also to the saddle-point describing the unstable solution. This unstable solution represents a new phase of matter: its low temperature transport properties differ qualitatively from both the metal and the insulator, displaying incoherent metallic behavior down to lowest temperatures.

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