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Dynamical Breakup of the Fermi Surface in a doped Mott Insulator MARCELLO CIVELLI, Physics Department and Center for Materials, Rutgers University, Piscataway NJ USA, MASSIMO CAPONE, INFM-SMC and Istituto dei Sistemi Complessi CNR and Department of Physics University of Rome "La Sapenza" , Rome ITALY, SRIVENKATESWARA KANCHARLA, Departement de physique and Regroupement quebecois sur les materiaux de pointe, Université de Sherbrooke, Sherbrooke, QUEBEC J1K 2R1, CANADA, OLIVIER PARCOLLET, Service de Physique Theorique, CEA Saclay , 91191, Gif-Sur Yvette, France, GABRIEL KOTLIAR, Physics Department and Center for Materials, Rutgers University, Piscataway NJ USA — The evolution from an anomalous metallic phase to a Mott insulator within the two-dimensional Hubbard model is investigated by means of the Cellular Dynamical Mean-Field Theory. We show that the density-driven Mott metal-insulator transition is approached in a non-uniform way in different regions of the momentum space. This gives rise to a breakup of the Fermi surface and to the formation of *hot* and *cold* regions, whose position depends on the hole or electron like nature of the carriers in the system.

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