Critical behavior of the transport coefficients at the plateau-insulator transition in IQHE[1] JUNTAO SONG, EMIL PRODAN, Department of Physics, Yeshiva University, New York, NY 10016 — Using the non-commutative Kubo formula for disordered lattice systems, we mapped the conductivity tensor $\sigma(E_F, T)$ as function of Fermi level E_F and temperature T for the disordered Hofstadter model. Convergence and accuracy tests indicate that the simulations can be used to investigate the critical behavior near the plateau-insulator transition. Our analysis provides the first quantitative theoretical confirmation of the well established experimental facts about the critical behavior: 1) The semicircle law for the components of the conductivity tensor; 2) The existence of the quantized Hall insulator state characterized by zero direct and Hall conductivities, but with Hall resistivity quantized at h/e^2; 3) Single scaling behavior with exponents that are consistent with previous studies.

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