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**Jaroslav M Kwapisz\*** ([jarek@math.montana.edu](mailto:jarek@math.montana.edu)), Department of Mathematical Sciences, Montana State University, Bozeman, MT 59717. *Conformal Dimension via  $p$ -Resistance: Sierpiński Carpet.*

We put forth the notion of  $p$ -resistance as a proxy for the combinatorial  $p$ -modulus and demonstrate its effectiveness by studying the (Ahlfors regular) conformal dimension of the Sierpiński carpet. Specifically, we construct large resistor networks approximating the carpet, establish weak-sup and sub-multiplicativity of their  $p$ -resistances, identify the conformal dimension as the associated critical exponent, and provide numerical approximations and rigorous two-sided bounds. In particular, we prove that the conformal dimension of the carpet exceeds  $1 + \ln 2 / \ln 3$ , the Hausdorff dimension of the Cantor comb contained therein. A conjectural construction (and a numerical picture) of the quasi-symmetric uniformization of the carpet emerges as a byproduct. (Received January 28, 2019)