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Quantum k-core Percolation on the Bethe Lattice L. CAO, J.M. SCHWARZ — Quantum percolation is the study of hopping transport of a quantum particle on randomly diluted percolation clusters. We investigate the Landauer conductance through the dilute Bethe lattice. We show that (1) p_q, the quantum percolation critical probability, is greater than p_c, the geometric percolation critical probability, and (2) for $p_q < 1$ that the quantum conductance transition is continuous with a quantum conductance exponent of 2, as in the classical case. We also study the Landauer conductance through a dilute Bethe lattice where the dilution is subject to the condition that each occupied bond/site must have at least k occupied neighboring bonds/sites. This geometric constraint defines k-core percolation. We find, again, that $p_q > p_c$ and, for $p_q < 1$, we calculate a quantum conductance exponent of 2 for $k = 3$ and a coordination number of four.

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