Further Improvements to the Upper Bound for the Site Percolation Threshold of the Square Lattice

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The upper bound for the site percolation threshold of the square lattice is decreased, continuing a series of recent improvements after a gap dating back to 1995. The bound is obtained by using the substitution method. New computational reductions and implementation improvements make calculations for site models more efficient and thus capable of handling larger regions. The site percolation model on a self-matching lattice is compared to the square lattice site percolation model in a two-stage process.

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