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Asymptotics of Condition Numbers of Large Matrices

We show that condition numbers of the worst $N \times N$ matrices A satisfying a Besov space $B(s, p, q)$ functional calculus behave asymptotically as $N^s/det(A)$. The proof depends on estimates of Besov analytic capacities of N points subsets of the unit disc. We also discuss some other classes of matrices, as well as the phenomenon of a boundary jump for the Wiener algebra capacity.