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Marta Strzelecka: Norms of structured random matrices

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We consider the structured Gaussian matrix G_A=(a_{ij}g_{ij}), where g_{ij}'s are independent standard Gaussian variables. The exact behavior of the spectral norm of the structured Gaussian matrix is known due to the result of Latala, van Handel, and Youssef from 2018. We are interested in two-sided bounds for the expected value of the norm of G_A treated as an operator from l_p^n to l_q^m. We conjecture the sharp estimates expressed only in the terms of the coefficients a_{ij}'s. The conjectured lower bound holds up to the constant depending only on p and q, and the upper bound is true up to the multiplicative constant depending linearly on a certain (small) power of ln(mn). This is joint work with Radoslaw Adamczak, Joscha Prochno, and Michal Strzelecki.

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