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On the limit of extreme eigenvalues of large dimensional random quaternion matrices.
(English) [Zbl 1331.15022]

Summary: Since E. P. Wigner [Ann. Math. (2) 67, 325–327 (1958; Zbl 0085.13203)] established his famous semicircle law, lots of attention has been paid by physicists, probabilists and statisticians to study the asymptotic properties of the largest eigenvalues for random matrices. Z. D. Bai and Y. Q. Yin [Ann. Probab. 16, No. 4, 1729–1741 (1988; Zbl 0677.60038)] obtained the necessary and sufficient conditions for the strong convergence of the extreme eigenvalues of a Wigner matrix. In this paper, we consider the case of quaternion self-dual Hermitian matrices. We prove the necessary and sufficient conditions for the strong convergence of extreme eigenvalues of quaternion self-dual Hermitian matrices corresponding to the Wigner case.

MSC:
15B33 Matrices over special rings (quaternions, finite fields, etc.)
15B52 Random matrices (algebraic aspects)
15A18 Eigenvalues, singular values, and eigenvectors

Keywords:
quaternion matrices; GSE; extreme eigenvalues

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References:


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