

1026-11-13

Eric Schmutz* (Eric.Jonathan.Schmutz@drexel.edu), Mathematics Department, Drexel University, Philadelphia, PA 19104. *Splitting Fields for Characteristic Polynomials of Matrices with Entries in a Finite Field.*

Let $\mathcal{M}_n(q)$ be the set of all $n \times n$ matrices with entries in the finite field \mathbf{F}_q . Let $\mathbf{X}_n(A)$ be the degree of the splitting field of the characteristic polynomial of A , and let μ_n be the average degree:

$$\mu_n = \frac{1}{|\mathcal{M}_n(q)|} \sum_A \mathbf{X}_n(A).$$

Then, as $n \rightarrow \infty$,

$$\mu_n = e^{c_0 \sqrt{n/\log n}(1+o(1))}.$$

where c_0 is an explicit constant. (Received December 17, 2006)