

Zbl 383.10031**Erdős, Pál; Szalay, Mihaly***The mathematical work of Paul Turán. I: 2. Statistical group theory and theory of partitions.* (In Hungarian)**Mat. Lapok 25(1974), 229-238 (1977). [0025-519X]**

In a sequence of papers *P.Erdős* and *P.Turán* [Z. Wahrscheinlichkeitstheorie verw. Gebiete 4, 175-186 (1965; Zbl 137.25602) (cf. Magyar Tud. Akad. mat. fiz. Tud. III. Oszt. Közl. 17, 51-57 (1967; Zbl 146.25403)); Acta Math. Acad. Sci. Hung. 18, 151-163 (1967; Zbl 189.31302); 18, 309-320 (1967; Zbl 235.20003); 19, 413-435 (1968; Zbl 235.20004); Periodica Math. Hung. 1, 5-13 (1971; Zbl 223.10005); J. Indian Math. Soc. 34, 175-192 (1971; Zbl 235.10008); Periodica math, Hung. 2, 149-163 (1972; Zbl 247.20008)] developed a statistical theory of the symmetric group S_n on n letters. They proved e.g., that, for almost all elements P of S_n (i.e., with the exception of $o(n!)P$'s at most), the (group theoretical) order $O(P)$ of P satisfies the inequality $|\log O(P) - 2^{-1} \log^2 n| < \omega(n) \log^{3/2} n$ if $\omega(N) \nearrow \infty$ arbitrarily slowly. A generalization of this gives that $O(P)$ shows a "logarithmic Gaussian distribution". The above mentioned sequence contains a number of statistical results on the arithmetical structure of $O(P)$, on the possible different values of $O(P)$, on the cardinalities of the conjugacy classes of S_n , and on the common orders of the elements in a random conjugacy class of S_n . *J.Dénes, P.Erdős* and *P.Turán* [Enseignement Math. 15, 89-99 (1969; Zbl 186.04201)] proved the analogue of the above mentioned distribution theorem for the alternating group A_n on n letters. These results are closely connected with the statistical theory of partitions of various type. *P.Turán* [Colloq. Math. Soc. János Bolyai 4, 1055-1082 (1970; Zbl 228.05006); J. Number Theory 6, 405-411 (1974; Zbl 296.05010); Journées arithmétiques de Bordeaux, Astérisque 24-25, 311-319 (1975; Zbl 308.10009); Colloq. int. Théorie comb.; Roma 1973, Tomo II, 181-200 (1976; Zbl 359.10041); Colloq. Math. Soc. J. Bolyai 19, Fourier Analysis and Approximation Theory (Budapest, 1976), Vol. II, 871- 875 (1979)] , *P.Erdős* and *P. Turán* [Acta Arith. 18, 53-62 (1971; Zbl 217.32202)], *M.Szalay* and *P.Turán* [Acta Math. Acad. Sci. Hung. 29, 361-379, 381-392 (1977; Zbl 371.10033, Zbl 371.10034); 32, 129- 155 (1978; Zbl 391.10031)] proved statistical results on the number of summands in partitions, on the distribution of summands in partitions, and on the value distribution of the characters of the complex irreducible representations of S_n .

Classification:

11P81 Elementary theory of partitions

20P05 Probability methods in group theory

20C15 Ordinary representations and characters of groups

11P81 Elementary theory of partitions

05A17 Partitions of integres (combinatorics)

20B05 General theory for finite permutation groups

11N45 Asymptotic results on counting functions for other structures

11-03 Historical (number theory)

20-03 Historical (group theory)

Articles of (and about) **Paul Erdős** in Zentralblatt MATH

01A70 Biographies, obituaries, personalia, bibliographies