

OBITUARY



Anatolli Alexeevich KARATSUBA (31-01-1937 to 28-09-2008)

We regret to record here the death of A. A. KARATSUBA on 28-09-2008. He was very much associated with the great mathematician I.M. VINOGRADOV who liked his work very much. Here we would like to mention a result of A. A. KARATSUBA. Let

$$\frac{1}{2} + ia_1, \frac{1}{2} + ia_2, \frac{1}{2} + ia_3, \dots \text{ where } 0 < a_1 < a_2 < a_3 < \dots$$

be all the non-trivial zeros of $\zeta(s)$ on the critical line in the upper half plane. Then

$$a_{n+1} - a_n < c_\epsilon a_n^{\frac{5}{32} + \epsilon}$$

where $\epsilon > 0$ is arbitrary and c_ϵ depends only on ϵ . This improves a result of R. BALASUBRAMANIAN who had $\frac{1}{6}$ in place of $\frac{5}{32}$ (It may be mentioned that A. IVIC has a slight improvement on $\frac{5}{32}$ (see his book on Riemann Zeta function).

KARATSUBA was born in Grozny and died in Moscow. He has about 26 publications. He got his Ph.D in 1962. (Thesis advisor M M KOROBOV). He got his D.Sc in 1966. In 1980 he became Professor in Steklov Institute, Moscow and continued in this position till his death.

K RAMACHANDRA is thankful to KARATSUBA's daughter for providing the information recorded above. Also she gave many other academic information about him recorded below (in particular list of publications).

Books:

1. Karatsuba A. A. Principles of analytic number theory (Osnovy analiticheskoy teorii chisel) (Russian), Moskva: Nauka, 1975, 183 p.; Basic analytic number theory (Russian, English). Berlin: Springer-Verlag, 1993. 222 p. (1993); translation from the book "Karatsuba A. A.: Principles of analytic number theory, 2-nd ed." (Osnovy analiticheskoy teorii chisel, 2-oe izd.) (Russian), Moskva: Nauka, 1983, 236 p. (Russian, English, Spanish, Chinese)
2. Arkhipov G. I., Karatsuba A. A., Chubarikov V. N. Theory of multiple trigonometric sums (Teoriya kratnykh trigonometricheskikh summ) (Russian) Moskva: Nauka, 1987, 368 p.; Arkhipov G. I., Chubarikov V. N., Karatsuba A. A. Trigonometric sums in number theory and analysis (English). Berlin-New-York: Walter de Gruyter, 2004, 554 p. (Russian, English)
3. Karatsuba A. A., Voronin S. M. The Riemann Zeta-Function. (English, transl. from the Russian by N. Koblitz) Berlin: W. de Gruyter, 1992, 396 p.; Voronin S. M., Karatsuba A. A. The Riemann zeta-function (Russian). Moscow: Phys.-Math. Lit., 1994, 376 p. (English, Russian)
4. Karatsuba A. A. Complex analysis in number theory. Boca Raton, FL: CRC Press, 1995. (English)

Papers:

1. Karatsuba A. A. Solution to a problem in the theory of finite automata (Russian) Usp. Mat. Nauk, 15:3(93) 157-159 (1960).
2. Karatsuba A., Ofman Yu. Multiplication of multidigit numbers on automata Soviet Physics-Doklady, 7, 595-596 (1963); translation from Dokl. Akad. Nauk SSSR, 145:2, 293-294, (1962).
3. Karatsuba A. A. Trigonometric sums of a special form and their applications (Russian) Izv. Akad. Nauk SSSR, Ser. Mat., 28:1, 237-248 (1964).
4. Karatsuba A. A. Systems of congruences and equations of Waring type Sov. Math. Dokl., 6, 1439-1441 (1966); translation from Dokl. Akad. Nauk SSSR, 165:2, 274-276 (1965).

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6. Karatsuba A. A. Sums of characters with prime numbers in an arithmetic progression *Math. USSR Izv.*, 5, 485-501 (1972); translation from *Izv. Akad. Nauk SSSR, Ser. Mat.*, 35:3, 469-484 (1971).
7. Arkhipov G. I., Karatsuba A. A., Chubarikov V. N. Trigonometric integrals *Math. USSR Izv.*, 15, 211-239 (1980); translation from *Izv. Akad. Nauk SSSR, Ser. Mat.*, 43:5, 971-1003 (1979).
8. Arkhipov G. I., Karatsuba A. A. On local representation of zero by a form *Math. USSR Izv.*, 19, 231-240 (1982); translation from *Izv. Akad. Nauk SSSR, Ser. Mat.*, 45:5, 948-961 (1981).
9. Karatsuba A. A. The distribution of zeros of the function $\zeta(1/2 + it)$ *Math. USSR Izv.*, 25, 519-529 (1985); translation from *Izv. Akad. Nauk SSSR, Ser. Mat.*, 48:6, 1214-1224 (1984).
10. Karatsuba A. A. On the zeros of the function $\zeta(s)$ in the neighborhood of the critical line *Math. USSR Izv.*, 26, 307-313 (1986); translation from *Izv. Akad. Nauk SSSR, Ser. Mat.*, 49:2, 326-333 (1985).
11. Karatsuba A. A. On the function $G(n)$ in Waring's problem *Math. USSR Izv.*, 27, 239-249 (1986); translation from *Izv. Akad. Nauk SSSR, Ser. Mat.*, 49:5, 935-947 (1985).
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13. Karatsuba A. A. The distribution of pairs of quadratic residues and nonresidues of a special form *Math. USSR Izv.*, 31:2, 307-323 (1988); translation from *Izv. Akad. Nauk SSSR, Ser. Mat.*, 51:5, 994-1009 (1987).
14. Karatsuba A. A. Approximation of exponential sums by shorter ones (English) *Proc. Indian. Acad. Sci. (Math. Sci.)*, 97:1-3, 167-178 (1987).
15. Karatsuba A. A. On the zeros of the Davenport-Heilbronn function lying on the critical line *Math. USSR Izv.*, 36:2, 311-324 (1991); translation from *Izv. Akad. Nauk SSSR, Ser. Mat.*, 54:2, 303-315 (1990).

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17. Karatsuba A. A. Analogues of Kloostermans sums *Izv. Math.*, 59:5, 971-891 (1995); translation from *Izv. Ross. Akad. Nauk, Ser. Mat.*, 59:5, 93-102 (1995).
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