



TO PROFESSOR YURII ALEKSANDROVICH BRYCHKOV

Professor Yuri Aleksandrovich Brychkov, born on February 29 of 1944 in Moscow, the capital of Russia, is a well-known authority in the field of analysis. He started his mathematical career in Moscow State University and graduated Faculty of Mechanics and Mathematics of this University in 1966. In 1966-1969 he took a Post-Graduate course in Department of Quantum Field Theory in Steklov Mathematical Institute of USSR Academy of Sciences under the guidance of Professor Yu.M. Shirokov. In 1971 he successfully defended Ph.D. Thesis. Since 1969 till nowadays, Y.A. Brychkov has been working in the Computer Center of USSR (now Russian) Academy of Sciences (currently at Dept. of Special Functions), and meanwhile in the period 2000-2002, he has been Researching Professor, in the Symbolic Computation Group, in Fac. of Mathematics - University of Waterloo, Canada.

The first area of Brychkov's mathematical research was devoted to generalized functions. He obtained new results in this area, basically connected with asymptotic properties of generalized functions, and his results, published in a series of papers, were presented in the book *"Integral Transforms of Generalized Functions"* written together with Professor A.P. Prudnikov.

The second area of Brychkov's mathematical research deals with investigation of integral transforms with generalized and special functions in the kernels. In this field he (with co-authors) has proved factorization properties of general integral transforms of convolution type and mapping properties of integral transforms with the Appel hypergeometric function F_3 in the kernels. Yu.A. Brychkov together with H.-J. Glaeske, A.P. Prudnikov and Vu Kim Tuan have published the monograph *"Multidimensional Integral Transformations"*. This book was the first publication devoted to properties not only of the classical multi-dimensional integral transforms by

Fourier, Laplace and Mellin but also multi-dimensional integral transforms with special functions in the kernels.

Under the influence of Prof. A.P. Prudnikov, the next area of Brychkov's mathematical research was devoted to the evaluation of integrals and series. He and his coauthors Prof. A.P. Prudnikov and the second coauthor of this article have obtained modern results in this field published in three volumes of the notebook of A.P. Prudnikov, Yu.A. Brychkov and O.I. Marichev "*Integrals and Series*", Vols. 1-3, Nauka, 1981, 1983, 1986. These notebooks, translated in English, present many new results in this field. The continuations of these books were two volumes of notebooks devoted to properties of the direct and inverse Laplace transforms: by A.P. Prudnikov, Yu.A. Brychkov and O.I. Marichev "*Integrals and Series. Vol. 4. Direct Laplace transforms*", Gordon and Breach Science Publishers, 1992" and "*Integrals and Series. Vol. 5. Inverse Laplace Transforms*", Gordon and Breach Science Publishers, 1992.

In the recent years, Professor Brychkov intensified his very productive research work. He derived a lot of new formulas for elementary and special functions of Bessel, Anger, Weber and other type, implemented into the internet page "<http://functions.wolfram.com/>" containing more than 300 000 formulas. He published also a new monograph "*Handbook of Special Functions. Derivatives, Integrals, Series and Other Formulas*", CRC Press, 2008 (see info in *FCAA*, Vol. 11, No 4 (2008)), and takes active part in other handbook projects.

Professor Brychkov is in close touch with mathematicians from many countries. He was invited to give talks at many International conferences, seminars and workshops in Bulgaria, Germany, Japan, Poland, Spain, USA and other countries. He was a Visiting Professor in Wolfram Research Corporation and many times he was invited by his colleagues from Germany, Poland and Japan.

Professor Brychkov gives a lot of his energy to publishing activity. He published many notebooks in Russian, republished in English. He is a member of the Editorial Boards of "*Integral Transforms and Special Functions*" (where he took an active part as a Secretary of this journal) and "*Fractional Calculus and Applied Analysis*". He is also a referee of *Zentralblatt für Mathematik* (from 1973) and *Mathematical Reviews* (from 1975).

We have been very happy to collaborate with Professor Yurii Brychkov from the end of 70's of 20th century when the second author began to

cooperate with him, while the first author met him at the end of 80's in the Third International Conference "Fractional Calculus and Applications" (Tokyo, May 29 - June 1 of 1989). Always active and enthusiastic, he keeps a permanent interest in various mathematical ideas and problems.

It would be possible to enumerate his personal qualities indefinitely. In this connection it is necessary to point out his cordial hospitality and readiness to help other people, which makes the life for his friends and colleagues more pleasant.

In conclusion we would like to forward our personal congratulations, and also on behalf of the Editorial Board of "FCAA", to Professor Yuri Aleksandrovich Brychkov and to wish him on his 65th birthday good health, happiness in family life and new great success in research.

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EDITORIAL NOTE. Prof. Brychkov is an author of numerous scientific papers. Therefore here is a "selected" list of them only, containing mainly the books authored by him.

LIST OF THE MAIN PUBLICATIONS OF PROFESSOR YURII BRYCHKOV

(with their References in Zbl. = Zentralblatt für Mathematik)

Books

1. Brychkov, Yu.A.; Prudnikov, A.P. *Integral Transforms of Generalized Functions*. Mathematical Reference Library (Russian), Nauka, Moskva, 1977. 287 p. **Zbl. 0464.46039**.
2. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series. Elementary Functions* (Russian), Nauka, Moskva, 1981. 799 p. **Zbl.0511.00044**.
3. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series. Special Functions* (Russian), Nauka, Moskva, 1983. 752 p. **Zbl.0626.00033**.
4. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series. Complementary Chapters* (Russian), Nauka, Moskva, 1986. 800 p. **Zbl.0606.33001**.

5. Brychkov, Yu.A.; Marichev, O.I.; Prudnikov, A.P. *Tables of Indefinite Integrals*. Handbook (Russian), Nauka, Moskva, 1986. 192 p. **Zbl.0676.00032**.
6. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series*. Vol. 1: *Elementary Functions* (English), Gordon and Breach Science Publishers, New York, etc., 1986. 798 p. **Zbl.0733.00004**.
7. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series*. Vol. 2: *Special Functions* (English), Gordon and Breach Science Publishers, New York, etc., 1988. 750 p. **Zbl.0733.00005**.
8. Brychkov, Yu.A.; Marichev, O.I.; Prudnikov, A.P. *Tables of Indefinite Integrals* (English), Gordon and Breach Science Publishers, New York, etc., 1989. 192 p. **Zbl.0728.26001**.
9. Brychkov, Yu.A.; Prudnikov, A.P. *Integral Transforms of Generalized Functions* (English), Gordon and Breach Science Publishers, New York, etc., 1989. 343 p. **Zbl.0729.46016**.
10. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series*. Vol. 3: *More Special Functions* (English), Gordon and Breach Science Publishers, New York, etc., 1990. 800 p. **Zbl.0967.00503**.
11. Brychkov, Yu.A.; Marichev, O.I.; Prudnikov, A.P. *Tables of Indefinite Integrals* (German), Harry Deutsch, Thun, 1992. 200 p. **Zbl.0744.26001**.
12. Brychkov, Yu.A.; Glaeske, H.-J.; Prudnikov, A.P.; Nuan, Vu Kim. *Multidimensional Integral Transformations* (English), Gordon and Breach Science Publishers, Philadelphia, PA, 1992. 386 p. **Zbl.0752.44004**.
13. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series*. Vol. 4: *Direct Laplace Transforms* (English), Gordon and Breach Science Publishers, New York, 1992. 619 p. **Zbl.0786.44003**.
14. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series*. Vol. 5: *Inverse Laplace Transforms* (English), Gordon and Breach Science Publishers, New York, 1992. 595 p. **Zbl.0786.44002**.
15. Brychkov, Yu.A. *Mellin Transforms: I* (Russian), Vychislitel'nyi Tsentr RAN, Moscow, 1997. 64 p. **Zbl.0890.44002**.
16. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series*. Vol. 1: *Elementary Functions*, 2nd revised ed. (Russian), Fiziko-Matematicheskaya Literatura, Moskva, 2003, 632 p. **Zbl.1103.00301**.
17. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series*. Vol. 2: *Special Functions*, 2nd revised ed. (Russian), Fiziko-Matematicheskaya Literatura, Moskva, 2003. 664 p. **Zbl.1103.00302**.

18. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. *Integrals and Series*. Vol. 3: *Complementary Chapters*, 2nd revised ed. (Russian), Fiziko-Matematicheskaya Literatura, Moskva, 2003. 688 p. **Zbl.1103.33300**.

19. Brychkov, Yu.A. *Handbook of Special Functions. Derivatives, Integrals, Series and Other Formulas* (English), Chapman and Hall/CRC, Boca Raton, FL, 2009. xix+780 p. **Zbl.1158.33001**.

Some Papers

1. Brychkov, Yu.A.; Shirokov, Yu. M. Some limit formulae for generalized functions. (Russian) *Mat. Zametki* **2** (1967), 81-90. **Zbl.0163.36602**.

2. Brychkov, Yu.A.; Shirokov, Yu. M. Über das asymptotische Verhalten von Fouriertransformationen. (Russian) *Teor. Mat. Fiz.* **4** (1970), 301-309. **Zbl.0201.58105**.

3. Brychkov, Yu.A. Asymptotic expansions of generalized functions. III. (English) *Theor. Math. Phys.* **23** (1976), 445-450. **Zbl.0411.46022**.

4. Brychkov, Yu.A.; Prudnikov, A.P.; Shishov, V.S. Operational calculus. (English) *J. Sov. Math.* **15** (1981), 733-765. **Zbl.0451.44003**.

5. Brychkov, Yu.A. On imbedding theorems for spaces of distributions. (Russian) *Generalized functions and their applications in mathematical physics (Proc. Int. Conf., Moscow 1980)*. 1981, 94-98. **Zbl.0511.46028**.

6. Brychkov, Yu.A. On the theory of spaces with dominating mixed derivative. (Russian) *Mat. Zametki* **31** (1982), 679-694. **Zbl.0495.46024**.

7. Brychkov, Yu.A. Theory of spaces with dominating mixed derivative. (English) *Math. Notes* **31** (1982), 345-354. **Zbl.0509.45022**.

8. Brychkov, Yu.A.; Prudnikov, A.P. Integral transforms of generalized functions. (Russian) *Itogi Nauki Tekh., Ser. Mat. Anal.* **20** (1982), 78-115. **Zbl.0552.46021**.

9. Brychkov, Yu.A.; Glaeske, H.-J.; Marichev, O.I. Factorization of integral transformations of convolution type. (Russian) *Itogi Nauki Tekh., Ser. Mat. Anal.* **21** (1983), 3-41. **Zbl.0562.44005**.

10. Brychkov, Yu.A. Integral transforms of generalized functions. (English) *Complex Analysis and Applications, Proc. Int. Conf., Varna, Bulgaria, 1981*. 1984, 97-102. **Zbl.0594.46036**.

11. Brychkov, Yu.A.; Glaeske, H.-J.; Marichev, O.I. Factorization of integral transformations of convolution type. (English) *J. Sov. Math.* **30** (1985), 2071-2094. **Zbl.0582.44005**.

12. Brychkov, Yu.A.; Glaeske, H.-J.; Marichev, O.I. The product structure of a class of integral transformations. (German) *Z. Anal. Anwend.* **5** (1986), 119-123. **Zbl.0593.44005**.

13. Brychkov, Yu.A.; Prudnikov, A.P. Integral transforms of generalized functions. (English) *J. Sov. Math.* **34** (1986), 1630-1655. **Zbl.0595.46043**.
14. Brychkov, Yu.A.; Marichev, O.I.; Yakubovich, S.B. Integral Appel F_3 -transformation with respect to parameters. (English) *Complex Analysis and Applications, Proc. Int. Conf., Varna, Bulgaria, 1985*. 1986, 135-140. **Zbl.0616.44001**.
15. Brychkov, Yu.A. Some differential relations for special functions. (Russian) *Soobshch. Prikl. Mat. Akad. Nauk SSSR, Vechisl. Tsentr, Mosk.* 1989. 27 p. **Zbl.0739.33001**.
16. Brychkov, Yu.A. On smoothness of generalized functions. (English) *The 100th anniv. of Nihon Univ., Fractional calculus and its applications, Proc. Int. Conf., Tokyo, Japan 1989*. 1990. 21-24. **Zbl.0764.46028**.
17. Prudnikov, A.P.; Brychkov, Yu.A.; Marichev, O.I. Evaluation of integrals and the Mellin transform. (English. Russian original) *J. Sov. Math.* **54** (1991), no. 6, 1239-1341; translation from *Itogi Nauki Tekh., Ser. Mat. Anal.* **27** (1989), 3-146. **Zbl.0725.44001**.
18. Brychkov, Yu.A. A generalization of the Cooke's duplication formulas for Bessel functions. (English) *Fract. Calc. Appl. Anal.* **4** (2001), no. 4, 543-548. **Zbl.1027.33004**.
19. Brychkov, Yu.A. Evaluation of some classes of definite and indefinite integrals. (English) *Integral Transforms Spec. Funct.* **13** (2002), no. 2, 163-167. **Zbl.1020.33002**.
20. Brychkov, Yu.A.; Geddes, K.O. Differentiation of hypergeometric functions with respect to parameters. (English) *Chuong, G.M. (ed.) et al., Abstract and applied analysis. Proc. Int. Conf., Hanoi, Vietnam, August 13-17, 2002*. River Edge, NJ: World Scientific. 2004. 15-28. **Zbl.1067.33005**.
21. Brychkov, Yu.A.; Geddes, K.O. On the derivatives of the Bessel and Struve functions with respect to the order. (English) *Integral Transforms Spec. Funct.* **16** (2005), no. 3, 187-198. **Zbl.1070.33003**.
22. Brychkov, Yu.A. On some formulas for Weber $E_\nu(z)$ and Anger $J_\nu(z)$ functions. (English) *Integral Transforms Spec. Funct.* **18** (2007), no. 1-2, 15-26. **Zbl.1109.33005**.
23. Brychkov, Yu.A. On some new series of special functions. (English) *Appl. Math. Comput.* **187** (2007), no. 1, 101-104. **Zbl.1112.33007**.
24. Brychkov, Yu.A. Power expansions of powers of trigonometric functions and series containing Bernoulli and Euler polynomials. (English) *Integral Transforms Spec. Funct.* **20** (2009), no. 11-12, 797-804.