

A NOTE ON THE ESTIMATE OF THE BETA DISTRIBUTION

DAWEI LU, JINGHAI FENG AND XINGZHI LIANG

Abstract. The lower and the upper estimates with explicit coefficients for the beta distribution with $a > 1, b > 1$ are given. Furthermore, using these results, the lower and the upper estimates of the beta distribution of the second kind and F-distribution, and also partial estimates of Student's t-distribution are obtained.

Mathematics subject classification (2010): 33B15, 26D15, 60E15.

Keywords and phrases: the beta distribution, the beta distribution of the second kind, F-distribution, Student's t-distribution.

REFERENCES

- [1] J. F. CHAMAYOU, *Products of double gamma, gamma and beta distributions*, Statist. Prob. Lett. **68** (2004), 199–208.
- [2] N. EUGENE, C. LEE AND F. FAMOYE, *Beta-normal distribution and its applications*, Commun. Statist. Theory Methods **31** (2002), 497–512.
- [3] O. S. GIOVANA, M. M. O. EDWIN AND M. C. GAUSS, *The beta modified Weibull distribution*, Lifetime Data Anal. **16** (2010), 409–430.
- [4] J. C. GITTINS AND M. J. MAHER, *A generalised incomplete beta function and its application to Multi-Line stock control*, J. Appl. Probab. **10**, 4 (1973), 748–760.
- [5] D. JOHNSON, *The triangular distribution as a proxy for the beta distribution in risk analysis*, J. Roy. Stat. Soc. D-Stat. **46**, 3 (1997), 387–398.
- [6] M. C. JONES, *The complementary beta distribution*, J. Stat. Plan. Infer. **104** (2002), 329–337.
- [7] M. C. JONES, *Kumaraswamy's distribution: A beta-type distribution with some tractability advantages*, Statistical Methodology **6** (2009), 70–81.
- [8] S. B. KENNETH AND D. B. LAUREN, *Stochastic orderings, folded beta distributions and fairness in coin flips*, Statist. Prob. Lett. **81** (2011), 632–638.
- [9] S. NADARAJAH AND S. KOTZ, *The beta exponential distribution*, Reliab. Eng. Syst. Safety **91** (2006), 689–697.
- [10] F. P. PATRÍCIA, M. M. O. EDWIN, M. C. GAUSS AND R. P. RODRIGO, *The beta Burr XII distribution with application to lifetime data*, Comput. Stat. Data Anal. **55** (2011), 1118–1136.
- [11] K. ZOGRAFOS AND N. BALAKRISHNAN, *On families of beta- and generalized gamma-generated distributions and associated inference*, Statistical Methodology **6** (2009), 344–362.