Bounds for some entropies and special functions

ADINA BĂRAR¹, GABRIELA RALUCA MOCANU² and IOAN RAŞA¹

ABSTRACT.

We consider a family of probability distributions depending on a real parameter and including the binomial, Poisson and negative binomial distributions. The corresponding index of coincidence satisfies a Heun differential equation and is a logarithmically convex function. Combining these facts we get bounds for the index of coincidence, and consequently for Rényi and Tsallis entropies of order 2.

Acknowledgements. GM is partially supported by a grant of the Romanian Ministry of National Education and Scientific Research, RDI Programme for Space Technology and Advanced Research - STAR, project number 513, 118/14.11.2016.

REFERENCES


References (Continued)

Received: 26.06.2017; In revised form: 15.01.2018; Accepted: 22.01.2018
2010 Mathematics Subject Classification. 94A17, 33E30, 33C05, 33C45.
Key words and phrases. Probability distribution, entropies, Heun functions, logarithmically convex functions.
Corresponding author: Gabriela Raluca Mocanu; gabriela.mocanu@academia-cj.ro

1 TECHNICAL UNIVERSITY OF CLUJ-NAPOCA
DEPARTMENT OF MATHEMATICS
MEMORANDUMULUI 28, 400114 CLUJ-NAPOCA, ROMANIA
E-mail address: ellenasontica@yahoo.com
E-mail address: ioan.rasa@math.utcluj.ro

2 ROMANIAN ACADEMY, CLUJ-NAPOCA BRANCH
ASTRONOMICAL INSTITUTE
CIREȘILOR 19, 400487 CLUJ-NAPOCA, ROMANIA
E-mail address: gabriela.mocanu@academia-cj.ro