

## SUPERQUADRATIC FUNCTIONS IN INFORMATION THEORY

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*Abstract.* Using Jensen's inequality and the converse Jensen's inequality for superquadratic functions we obtain new estimates for Shannon's entropy of the random variable  $X$  and derive new lower and upper bounds for the Shannon entropy in the terms of the Zipf and Zipf-Mandelbrot's law.

*Mathematics subject classification (2010):* 94A15, 94A17, 26D15, 26A51.

*Keywords and phrases:* Superquadratic function, Jensen's inequality, Shannon entropy, Zipf-Mandelbrot's law.

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