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Mathematical Physics

constant

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(Submitted on 25 Jun 2011) We develop series representations for the Hurwitz and Riemann zeta functions in terms of generalized Bernoulli numbers (N\"{o}rlund polynomials), that give the analytic continuation of these functions to the entire complex plane. Special cases yield series representations of a wide variety of special functions and numbers, including log Gamma, the digamma, and polygamma functions. A further byproduct is that \$\zeta(n)\$ values emerge as nonlinear Euler sums in terms of generalized harmonic numbers. We additionally obtain series and integral representations of the first Stieltjes

Series representations of the Riemann and

integral representations of the first Stieltjes

Hurwitz zeta functions and series and

Comments: 28 pages, no figures Subjects: Mathematical Physics (math-ph); Number Theory (math.NT) MSC classes: 11M06, 11Y60, 11M35 Cite as: arXiv:1106.5146 [math-ph] (or arXiv:1106.5146v1 [math-ph] for this version)

constant \$\gamma_1(a)\$. The presentation unifies some earlier results.

Submission history

From: Mark Coffey [view email] [v1] Sat, 25 Jun 2011 16:31:27 GMT (16kb)

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