

MR1250774 (95a:65010) 65B10

Lewanowicz, Stanisław (PL-WROC-C)

A simple approach to the summation of certain slowly convergent series. (English summary)

Math. Comp. **63** (1994), *no.* 208, 741–745.

Series of the type $\sum_{k=1}^{\infty} k^{v-1} r(k)$, where $0 < v \leq 1$ and r is a rational function of the form $p(k)/q(k)$, p, q real polynomials, $\deg p \leq \deg q$, and all zeros of q have nonpositive real parts, can be simplified to considering series of the type $\sum_{k=1}^{\infty} (k+b)^{v-1}/(k+a)^m$, where $m \geq 1$ and $0 < v \leq 1$. The author shows that application of the Euler-Maclaurin formula to series of this latter form reduces the summation problem to that of evaluation of Gauss's hypergeometric function ${}_2F_1$. Examples are provided.

Reviewed by [Thomas A. Atchison](#)

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