

**Zudilin, Wadim**

**Computing powers of two generalizations of the logarithm.** (English) Zbl 1088.11015  
Sémin. Lothar. Comb. 53, B53c, 6 p. (2005).

Summary: We prove multiple-series representations for positive integer powers of the series

$$L(z; \alpha) = \sum_{n=1}^{\infty} \frac{z^n}{n + \alpha}, \quad |z| < 1, \alpha \geq 0, \quad \text{and} \quad \ell_q(z) = \sum_{n=1}^{\infty} \frac{z^n q^n}{1 - q^n}, \quad |z| \leq 1, |q| < 1.$$

The results generalize a known formula for powers of the series for the ordinary logarithm  $-\log(1 - z) = L(z; 0)$ .

**MSC:**

- [11B65](#) Binomial coefficients; factorials;  $q$ -identities
- [05E05](#) Symmetric functions and generalizations
- [33B10](#) Exponential and trigonometric functions
- [33D15](#) Basic hypergeometric functions in one variable,  ${}_r\phi_s$

Cited in **1** Document

**Full Text:** [EuDML](#) [EMIS](#)