

Summation of certain series containing the digamma function

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Series containing the digamma function arise when calculating the parametric derivatives of the hypergeometric functions and play a role in mathematical physics. As these series are typically non-hypergeometric, a few instances when they are summable in terms of hypergeometric functions are of importance. In this talk, we will discuss some known and new examples of this type. In particular, we will present several identities that can be viewed as hypergeometric expressions for the 1-norm of the gradient of the generalized hypergeometric function with respect to all its parameters.

The talk is based on a joint work with Asena Çetinkaya.

References

- [1] A. Çetinkaya and D. Karp, On digamma series convertible into hypergeometric series, preprint, submitted to AMS Contemporary Mathematics Proceedings on hypergeometric functions, q-series and generalizations, (2023) Preprint: arXiv:2304.04102