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2000c:33002[Koepf, Wolfram](#) (D-HTWK-NS)★ **Hypergeometric summation. (English summary)**

An algorithmic approach to summation and special function identities.

Advanced Lectures in Mathematics.

Friedr. Vieweg & Sohn, Braunschweig, 1998. x+230 pp. DM 69.00. ISBN 3-528-06950-3
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References: 0**Reference Citations: 0****[Review Citations: 1](#)**

The book under review deals with the modern algorithmic techniques for hypergeometric summation, most of which have been introduced within the last decade. All the algorithms are developed and carefully implemented in the computer algebra system Maple and can be downloaded from <http://www.vieweg.de/welcome/downloads/koepf.zip>.

The first three chapters serve as notations and show how to transform $(q-)$ binomial coefficient summations into hypergeometric functions and then use the known database to find their sums. The next six chapters are devoted to the “six basic algorithms” by Sister Celine, Gosper, Wilf-Zeilberger, Zeilberger, Koepf and Petkovšek, respectively. Finally, Chapters 10–13 deal with Differential equations for sums, Hyperexponential antiderivatives, Holonomic equations for integrals, and Rodrigues formulas and generating functions, respectively. The author provides many worked out sessions with Maple and a wealth of exercises at the end of each chapter.

This well-written book should be recommended for anybody who is interested in binomial summations and special functions.

Reviewed by [Jiang Zeng](#)

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