

## Definite Integration of D-finite Functions via Generalized Hermite Reduction

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Hermite reduction is a classical algorithmic tool in symbolic integration. It is used to decompose a given rational function as a sum of a function with simple poles and the derivative of another rational function. It provides a canonical form modulo derivatives of rational functions. We extend Hermite reduction to arbitrary linear differential operators instead of the pure derivative, and develop efficient algorithms for this reduction. We then apply the generalized Hermite reduction to the computation of linear operators satisfied by definite integrals. The resulting algorithm is a generalization of reduction-based methods for creative telescoping.

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