

# A New Creative Telescoping Algorithm for Multiple Integrals

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Creative Telescoping is a method that allows to compute differential equations satisfied by an integral with parameters. Algorithms using this method can be categorized into three main families: those employing Ansätze, those utilizing reductions, and those based on elimination in D-modules.

In this presentation I will present a new creative telescoping algorithm tailored for multiple integrals of holonomic functions. This novel algorithm can be regarded as both an extension of Lairez's reduction-based algorithm, which is limited to integrals of rational functions, and an enhancement of Takayama's algorithm based on D-module theory. Notably, our algorithm establishes a connection between the D-module and reduction approaches.

This is a joint work with my PhD advisors Frédéric Chyzak and Pierre Lairez.