Factorization of Linear Differential Operators

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Summary: Factoring differential operators is reducing differential equations to other differential equations of lower order. There exists a method for computing such factorizations that is more than 100 years old. However, there are a number of disadvantages to this method that make it unsuitable for "complicated" differential operators.

In the talk I will describe a new method. First I will introduce a number of properties of local (i.e., over the power series) differential operators, such as the generalized exponents. These properties will be used to show how local factorizations can be used to compute global (i.e., over the rational functions) factorizations.