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Solving differential elimination problems with Thomas decomposition by Daniel Robertz

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Abstract. This talk gives an introduction to the Thomas decomposition method for systems of nonlinear partial differential equations. A Thomas decomposition is a finite family of so-called simple differential systems, each of which is formally integrable, and such that the solution set of the given PDE system is the disjoint union of the solution sets of the simple systems. This versatile technique allows solving differential elimination problems, for example, for the analysis of certain structural properties of nonlinear control systems. The Thomas decomposition method has been implemented in Maple.