

## Postprocessing of DAEs in MapleSim and Maple

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Physical multi-domain models in MapleSim are typically entered as a block diagram and translated automatically into a system of differential-algebraic equations (DAEs). These equations are simplified first by various techniques, keeping them equivalent to the original system, i.e. no model reduction is done here. The resulting set of DAEs (along with initial conditions and parameters) is then solved numerically by standard methods such as Runge-Kutta-Fehlberg or Rosenbrock. We demonstrate how this DAE system (in simplified or unsimplified form) can be further analyzed to obtain deeper insight into the mathematical structure of a model, with a focus on techniques that are not available in traditional simulation software. This includes questions of optimization, code generation and (symbolic) control design.