

Selected Publications

Modelica

An introduction to Modelica is given in the paper

H. Elmqvist, S.E. Mattsson and M. Otter: "Modelica - A Language for Physical System Modeling, Visualization and Interaction", the 1999 IEEE Symposium on Computer-Aided Control System Design, Aug 1999. <http://www.Modelica.org/papers/ModelicaCACSD99.pdf>

Hybrid modeling is discussed in the accompanying paper

M. Otter, H. Elmqvist, S.E. Mattsson: "Hybrid Modeling in Modelica based on the Synchronous Data Flow Principle", the 1999 IEEE Symposium on Computer-Aided Control System Design, CACSD'99, Aug 1999. <http://www.Modelica.org/papers/hybrid99.pdf>

A comprehensive overview of Modelica with many examples is given in the tutorial

"Modelica: A unified object-oriented language for physical systems modeling - Tutorial", Modelica Association, Dec 2000. <http://www.Modelica.org/current/ModelicaTutorial14.pdf>

The semantic specification of Modelica version 2.0 is given in

"Modelica: A unified object-oriented language for physical systems modeling - Language Specification, Version 2.0", Modelica Association, January 2002. <http://www.Modelica.org/current/ModelicaSpec20.pdf>

Efficient simulation

Approaches to efficient simulation of hybrid systems and in particular real-time simulation of an automatic gearbox are discussed in

S.E. Mattsson, M. Otter and H. Elmqvist: "Modelica Hybrid Modeling and Efficient Simulation", the 38th IEEE Conference on Decision and Control, CDC'99, Phoenix, Arizona, USA, Dec 1999. <http://www.Modelica.org/papers/ModelicaCDC99.pdf>

Solution of high index differential-algebraic equations is discussed in

S.E. Mattsson, H. Olsson and H. Elmqvist: "Dynamic Selection of States in Dymola", Modelica Workshop 2000, Oct 2000. <http://www.Modelica.org/workshop2000/proceedings/Mattsson.pdf>

Automotive Applications

Modeling and simulation of complete cars are discussed in

M. Tiller, P. Bowles, H. Elmqvist, D. Brück, S.E. Mattsson, A. Möller, H. Olsson and M. Otter: "Detailed Vehicle Powertrain Modeling in Modelica", Modelica Workshop 2000, Oct 2000. <http://www.Modelica.org/workshop2000/proceedings/Tiller.pdf>

J. Andreasson, A. Möller and M. Otter: "Modeling of a Racing Car with Modelica's Multibody Library", Modelica Workshop 2000, Oct 2000. <http://www.Modelica.org/workshop2000/proceedings/Andreasson.pdf>

The power train library is presented in

M. Otter, M. Dempsey and C. Schlegel: "Package PowerTrain: A Modelica library for modeling and simulation of vehicle power trains", Modelica Workshop 2000, Oct 2000. <http://www.Modelica.org/workshop2000/proceedings/Otter.pdf>