Bond graph simulation and symbolic extraction toolbox in MATLAB/SIMULINK

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Abstract

Bond graph toolbox, developed in the MATLAB/SIMULINK environment, has two-fold functions: First to simulate the system using bond graph and second to extract the dynamical system equations in symbolic form. This development is an amalgamation of simulation power of the MATLAB/ SIMULINK and modelling power of the bond graph. The toolbox is divided into two parts. One deals with the numerical simulation of the bond graph model and the other handles extraction of dynamic equation in symbolic form. The process of toolbox development is discussed in detail, which is supplemented by an adequate number of examples that demonstrates its power.

Keywords: Bond graph, toolbox, symbolic extraction, MATLAB/SIMULINK.

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