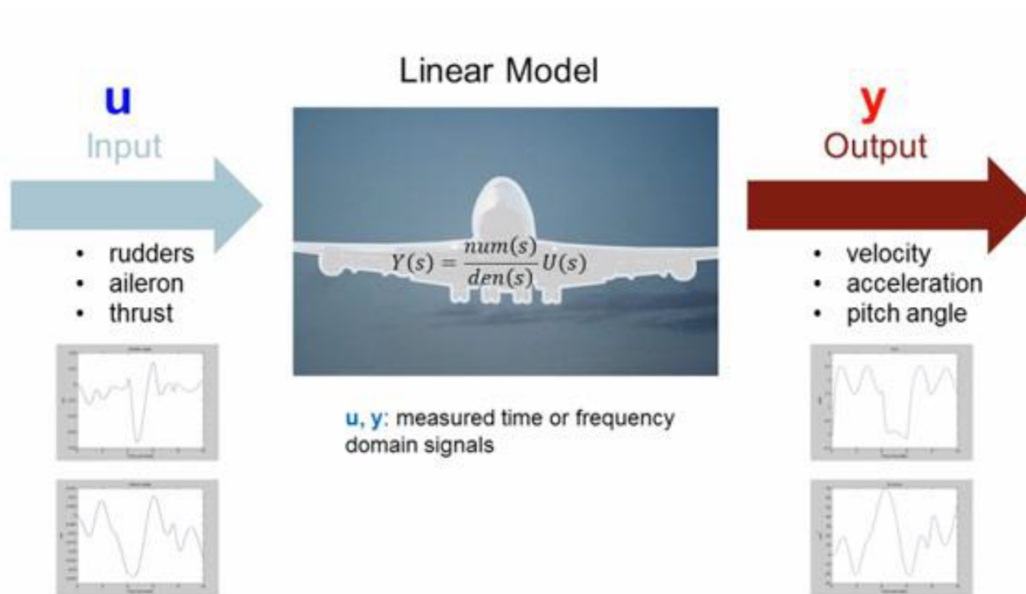


Approximation of Port-Hamiltonian models

Mir Mamunuzzaman
University of Twente



Source: System Identification Toolbox, MathWorks®

Mathematical modeling is an essential as well as crucial step in understanding the dynamical behavior of physical systems and the interaction between them. The desire to capture the physical phenomena as accurate as possible often generates models which are highly complex and/or have large state dimensions. Due to this high complexity and/or large dimensionality, the conventional techniques of analysis, controller design, and numerical simulation may fail to give reasonable solutions. Hence an approximation of such a model would be very welcome. Naturally, this simpler model should still represent the important behavior of the original model. My research is focused on developing techniques for such kind of approximations based on the input-output data of the physical systems.