Reduced Order Models in the context of System Level Simulation

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The goal of system level simulation is to simulate and analyze virtual prototypes of the complete product being designed. This requires the ability to combine detailed physics based models, with behavioral models (such as those developed using languages like Modelica and VHDL-AMS), compact device models (typically developed using C++) and controls and embedded software. ROMs are particularly useful in this context.

This talk will cover some definitions of model types and ROMs in the context of system level simulation. We will look at a typical model reduction/ROM flow in the context of commercial software from ANSYS. We will then look at examples and applications where existing techniques work well - for example S-parameter fitting for electronics and linear network fitting for LTI thermal systems. Finally, we will present current areas of research and highlight key challenges - including the need and motivation for standardization.