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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Seminar

Title : Error Estimation in Model Order Reduction of Elastic Multibody Systems

Speaker : Ashish Bhatt, University of Stuttgart, Germany

Date : Friday, October 12, 2018

Time : 11:00 AM

Venue : Nambu Discussion Room (Left), ICTS Campus, Bangalore

Abstract : The aim of model order reduction (MOR) is to alleviate the computational complexity of a mathematical model by replacing it with a surrogate model of reduced complexity. MOR methods invariably introduce errors which can be broadly classified as the error in the desired output (quantity of interest) and the error in the solution. We first show how to eliminate error in the Hamiltonian and symplecticness through MOR in the inner product space a Hamiltonian system naturally lends itself to. Then we certify a nonlinear partial differential algebraic equation representing an elastic multibody reduced model by estimating the error in the finite element solution of the corresponding full order model. The reduced model, obtained via proper orthogonal decomposition, is certified by deriving a novel and versatile in-situ a posteriori error estimator.