

# Model Order Reduction Methods for Numerical Models

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**Abstract.** This study addresses model order reduction methods used to reduce high-order numerical models created using the finite element method. Several reduction methods are presented, and a basic example of employing said methods to reduce the finite element model of the fixed beam created in the MultiFEM program is showcased. Different mesh qualities are used to develop high-order state-space models which are later compared to their reduced counterparts in terms of initial state response and output response.