

MODEL-BASED SIMULATION OF STRUCTURAL RESPONSES TO EXTREME LOADING CONDITIONS

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ABSTRACT

Structural responses to extreme loading conditions, such as impact, penetration, explosion, and high-speed machining, have attracted increasing attention in the recent years because of the interesting phenomena involved and the great challenges to modeling and simulation. As localization, fracture, fragmentation and phase transformation occur, the multi-scale and multi-physics phenomena should be considered, and new theories and numerical methods are needed to model and simulate the structural responses to extreme loading accurately and effectively. This mini-symposium aims at providing an opportunity for researchers in the related fields to discuss recent results and to exchange new ideas. Anyone interested in the modeling and simulation of the structural responses to extreme loading conditions is welcome to participate in the mini-symposium. Presentations can be in (but is not limited to) one of the following fields:

- Development and implementation of novel numerical methods, such as meshfree methods, particle methods, X-FEM and boundary methods, for modeling and simulation of the structural responses to extreme loading
- Efficient and accurate impact-contact algorithms
- Multi-scale modeling procedures
- Multi-physics modeling procedures
- Parallel algorithms and large-scale computation for the problems with extreme loading
- Coupled Lagrangian-Eulerian schemes for the problems with moving boundaries
- Inverse solutions and optimization in the problems with extreme loading
- Verification, validation, and software development