

## Plan Overview

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*A Data Management Plan created using DMPTool*

**Title:** Collaborative Research: A Novel Physics-Based Fluid-Solid Interaction Methodology

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## **Collaborative Research: A Novel Physics-Based Fluid-Solid Interaction Methodology**

The data will be managed by the PI's lab (Computational Mechanics Laboratory [CML] and Cluster, University of Kansas). There are no additional costs associated with data management.

The data expected to be used will be commonly available material data for various solids and fluids. This data will be stored in text format and used in material models. Data resulting from numerical solutions of models will be in text format as well as images generated from the numerical data. All data will be stored in the CML computer system and cluster, with several backups kept. Depending on the number of test simulations analyzed, up to thirty different data sets may be generated, with up to 500 GB total data.

Data is expected to be retained for the life of the CML, at least ten years following publication of the results. Models and methodologies for data generation will be publicly available, so raw data and images can be regenerated in perpetuity.

Input data for models is formatted for the FINESSE finite element system. Data is in ASCII text file. This input data includes material data, problem geometry, and boundary/initial conditions. Results for each analysis are stored in ASCII text files organized by column: the first columns being the independent variables and the final column being the computed dependent variable. A different output file is generated for every dependent variable. The results are not meaningful without the input data describing material, geometry, and conditions.

Data will be made publicly available as soon as possible through publication of results, likely beginning during the life of the grant. The publication will include the input data as well as output data in graphic form (i.e. images generated from numerical results). Due to the large size of the full data sets, full data will be made available on email request.

The CML has a cluster with more than 200 TB of storage space with various redundancies and backups to secure long term storage of the data. Additionally, there are several devoted storage drives in the lab for additional protection of the data. Data will be kept for the life of the CML with access available upon request.

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