Plan Overview

A Data Management Plan created using DMPTool

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Title: Acoustic monitoring for structural flaws

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Funder: United States Department of Energy (DOE) (energy.gov)

Template: Department of Energy (DOE): Generic

Project abstract:

Nuclear microreactors prioritize modularity and portability and are intended to be a cost-effective technology for non-conventional nuclear markets. As such, the development of microreactors into a safe and feasible solution for energy security applications will necessitate the development of non-destructive technologies to monitor the integrity of inaccessible reactors components during operation. This demonstration applies linear and nonlinear acoustic techniques, in combination with machine learning, to detect and classify mechanical changes (stress and damage) in a test article which are broadly representative of potential operating challenges within a functioning microreactor. All data for this project will be collected on openly released components (i.e., unclassified non-export-controlled geometries and materials) and made publicly available to provide the community with developmental data to use for future technique and technology development.

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Acoustic monitoring for structural flaws

Data will be generated using various experimental techniques as well as theoretical calculations and simulations. It will be made available to other researchers on request and to students and postdocs for further analysis and validation for academic purposes (i.e., educational purposes and research and development activities).

Data is limited to mechanical vibrational data, settings and parameters important to the collection of the data, and details of the component or test-article under inspection.

The results of utilizing the investigations and analyzing the respective data will be published in peer-reviewed scientific and technical journals as appropriate. Appropriate credit (e.g., citation, acknowledgement, and/or co-authorship) must be given to this project and the project contributors when this data is used in publication.

Data will be made available from direct requests to the PI and/or listed project data managers. Distribution will be arranged on a per request basis, utilizing open file sharing repositories, private communication, et al, as appropriate and available. Open source data repository resources will be used when available and made public whenever possible.

Data collected and shared will not include any personally identifiable information, nor information deemed controlled (e.g., classified, export controlled, proprietary, official use only, etc.).

Planned Research Outputs

Dataset - "Acoustic monitoring demonstration data"

Vibrational data collected during a series of experiments on a core-block-like test article. Data includes vibrational source and response signals for various mechanical states (stress and damage).

Planned research output details

Title	Type	Anticipated release date	Initial access level	Intended repository(ies)	Anticipated file size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
Acoustic monitoring demonstration data	Dataset	2024-05-02	Open	None specified		Custom Data Use Agreements/Terms of Use	None specified	No	No