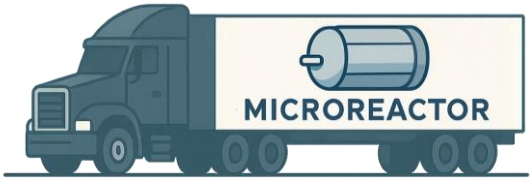

Energy in Motion: Atoms on Wheels – Safe, Monitored Transportation of Microreactors

This project aims to create the first digital twin for microreactor highway transportation via semi-truck, addressing the growing national need for safe and efficient deployment of advanced nuclear technologies. As microreactors transition from design to field use, ensuring secure, monitored transport will be critical for public safety, regulatory confidence, and industry scalability.

Goal and Problem

The goal is to build a platform that integrates real-time sensing and active data transmission from a transported microreactor unit. Current approaches rely on static analyses and lack dynamic, real-time monitoring. This creates a knowledge gap in safe microreactor transport, particularly at large scale.

Technical Landscape

The proposed digital twin will draw from multiple data streams, such as radiation from the microreactor, vessel temperature, weather, and road conditions, and provide operators and regulators with predictive, real-time feedback. Proprietary industry data will be safeguarded through NDAs and University legal frameworks to ensure collaboration while protecting sensitive information.

Approach and Plan

The project will progress in two phases. Phase 1 ($20k, 1 year) will deliver proof-of-concept using public data, demonstrating feasibility at negligible risk. Phase 2 (minimum of $300k, 3 years) will build a full-scale digital twin, leveraging the University of Utah Training Reactor (UUTR) and Americium-Beryllium neutron source to emulate transport conditions.

Key Metrics

Reduction in training time

Provide real-time drivers with informed information

Impact and Transition

By enabling safe, monitored microreactor transportation, this project supports U.S. clean energy deployment. Partnerships with microreactor startups and alignment with DOT/DOE priorities will ensure commercialization and national impact.