Contribution ID: **123** Type: **Talk (15min + 5min)**

VITESS: Advancing Neutron Instrument Simulation and Virtual Experiments

Thursday 27 February 2025 11:00 (20 minutes)

Research software plays a crucial role in advancing science by enabling accurate modeling and simulation of experiments. One example is VITESS, a software tool that simulates how neutrons behave in scientific instruments. These simulations help researchers design and optimize experiments in fields ranging from materials science to energy research.

Since its creation in 1999, VITESS has been used to simulate instruments at research facilities worldwide. The latest version, VITESS 3.6, introduces significant improvements that make the software easier to use, more reliable, and capable of addressing modern research challenges.

Key updates include:

- Improved Visualization: Enhanced graphics make it easier to see and understand simulation results.
- New Features: Tools have been added to support a wider range of experiments, such as tracking neutron pathways and creating realistic models of experimental setups.
- Real-Time Feedback: Users can now monitor simulations as they progress, allowing adjustments to be made without waiting for the entire process to finish.

These advancements help make VITESS a versatile and user-friendly tool for researchers. Future versions will build on these features, offering new ways to collaborate and integrate with other scientific software.

This presentation will introduce the audience to VITESS and its applications, demonstrating how it supports the development of cutting-edge research tools. By showcasing practical examples, such as designing instruments for next-generation neutron research facilities, we aim to inspire new connections between research software engineering and the neutron science community.

I want to participate in the youngRSE prize

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