

Refl1D

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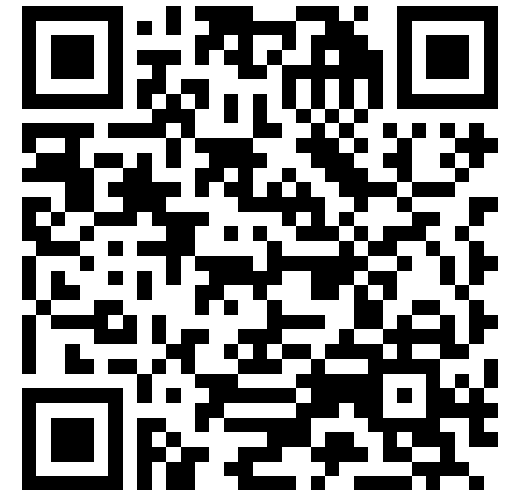
NIST Center for Neutron Research

SXNS 17 ORSO Satellite Meeting

2024-07-19

Refl1D: Multi-Facility Collaboration

- Developers from
 - NIST
 - ISIS
 - ORNL
- Meetings monthly
- Joint governance (repo ownership)
- First Code Camp: 9-12 September, 2024 @ORNL



Refl1D: webview GUI (alpha release)

- Simplifies deployment vs. OS-specific app
 - pure Python package / wheel
- Enables remote server (HPC) / local client
- Can embed GUI in Jupyter notebook (define model inline)
- Fitting session state saved to HDF5 (reloadable)
- History of fits saved to session
- Model builder (serializable models)

Refl1D: core capabilities

- Mixed models (incoherent sum)
- Simultaneous fitting of multiple models
 - Tied parameters between models on-demand
- Expression-based constraints (equality and inequality)
- DREAM (MCMC) fitter
 - Statistical error bars on parameters
 - Correlations between parameters
- Nevot-Croce approximation or micro-slabbed interfaces
- Full treatment of 3D magnetic field and moment of each layer including Zeeman effects.

Refl1D: demo

- <https://reflectometry.github.io/refl1d-demo-summer-school24>

