

A look inside DAVE...

Data Reduction Tools

- Triple-axis spectrometers (BT2, BT4, BT7, BT9, SPINS)
- Backscattering (HFBS)
- Filter-analyzer spectrometer (FANS)
- Time-of-flight (DCS, FCS)
- Neutron spin-echo (NSE)
- ASCII data reader for reading data into DAVE from other facilities

Experiment Planning Tools

TAS spurion calculator

- Calculates apparent inelastic peak positions due to beam contamination

TOF Experiment planner

- Calculates kinematically allowed regions of phase space to help user choose wavelength, etc.

Neutron Cross-Sections

- Given a chemical formula, calculates scattering and absorption cross-sections

Hindered rotor calculators

- Calculates eigenvalues and transition energies for hindered three-fold and hindered two-fold rotors

Self-shielding correction calculator

- Calculates single and double scattering intensities for isotropic scattering by a series of concentric annuli and a central cylinder

Gaussian98 Calculator

- FANS tool estimating measured spectrum using output from Gaussian calculation

Data Visualization Tools

Data Browser

- General purpose data visualization, introspection, and manipulation tool
- Rebin, scale, add offset to individual data sets
- Extract 1D slices or 2D cuts of data
- Create contour, image, and surface plots of 2D data sets
- Create multi-plots of 1D data sets
- Extensive customizable plot attributes
- Create multiple view of same data set
- Multiple output options: JPEG, PNG, TIFF, BMP, postscript
- Merge/combine multiple 1D or 2D data sets into a single 2D data set

DAVE PEEK

- View data being collected on the NCNR instruments in real-time (available at NCNR only)

Data Analysis Tools

PAN: Peak Analysis

- Fit empirical models to 1D and 2D data
- Drag-and-drop functionality for initial parameter guesses
- View Q-dependence of any fit parameter or view the EISF (elastic-incoherent structure factor)
- Incorporates instrumental resolution function in least-squares fitting
- Intuitive visualization of parameter correlations
- Large library of built-in fit functions
- User defined fit functions
- Fit interrupt option

DCS MSLICE

- Advanced visualization and analysis tool with three modes: powder, single-crystal and diffuse scattering
- Color contour and surface plots of $S(Q, \omega)$
- Background subtraction, detector efficiency, masking, and intensity normalization
- Flexible plotting of slices of $S(Q, \omega)$

RAINS: Refinement Application for Inelastic Neutron Scattering

- Fit 2D data to a parametrized surface model of $S(Q, \omega)$
- Incorporates instrumental resolution function in least-squares fitting
- Incorporates instrument resolution in fitting
- Model functions include N-fold diffusion on a circle, translational diffusion, diffusion on a sphere, diffusion in a sphere, three-fold tunneling

Fourier Transform Toolkit

- Estimate resolution-corrected $I(Q, t)$ from measured sample scattering and resolution function
- Monte-Carlo error estimation through the Fourier Transformation
- Flexible pre-processing and post-processing options

Data Introspection Tools

- Export any quantity in a data file as ASCII
- View the data treatment of any reduced file

Miscellaneous Tools

Electronic Notebook

- Create an HTML log file to be shared with collaborators containing details of your data reduction, visualization, and analysis
- Include plots from any of the DAVE programs