

Multi-platform Processor Framework for Data Analysis, Data Acquisition and Simulation

ANSIO

N. Xiong, P. Hathaway, T. Lam, N. Hauser, The Bragg Institute, ANSTO Norman.Xiong@ansto.gov.au; B87 PMB 1, Menai NSW 2234, Australia

The Mission

- Simplify scientific software development and deployment
- Contribute algorithms at runtime
- Support multiple computing languages
- Generate GUI elements automatically
- Reuse sharable libraries
- Feature a common sense user interface

Processor Framework

- Concept
 - > Chain together visual blocks to perform a variety of tasks
 - > Support contribution of processors and processor chains at runtime
- Structure
 - > Processors visual wrappers of code blocks to carry out unit tasks
 - ➤ Ports interface to access fields of processor
 - ➤ Connectors links between ports to make information flow
 - Composite processors Analysis Data Reduction Processor Chain Kowari Experiment Workbench 1.3.0 processors that hold other processors
 - ➤ Frameworks the shells of processor chains

Processor Chain of SANS Data Reduction transmission file: VAR plot type selection: VAR framework: Processor pre-calculation data manager <Processor> <Processor> election: VAR raw data: OUT pre calculated: OUT bg map file: VAR output : OU' background correction <Processor> data: IN_ integration input: IN bg raw data : IN instrument status **Q** integration centroid: IN <Processor> bg corrected: OUT matadata out : OU data wrap: OUT integration result : OUT given centroid: VAR plot type: VAR eff raw data: IN transmission: VAR efficiency correction plotting manager centroid calculation <Processor> <Processor> <Processor> iven value : VAR plot : OUT eff corrected: OUT centroid estimation: OU

Graphical User Interface

- Design Interface
 - > Help user to contribute code in a choice of programming languages
 - > Provide visual tools to define chains
- Generic GUI
 - > Provide graphical elements for processor blocks automatically
 - ➤ Manage data and plots
- Custom GUI

X:58.74 Y:-99.79 Value:12.109 | Zoom 100

Intensity Integration;

Data View Fitting Mask Export

CoverlayPlot[3]

- > Provide fixed user interfaces
- > Reuse visual elements from generic **GUI**

Applications

⊕ D:\data\KWR0003113.nx.hdf

D:\data\KWR0003115.nx.hdf

 \pm D:\data\KWR0003220.nx.hdf D:\data\KWR0003221.nx.hdf

 \oplus D:\data\KWR0003222.nx.hdf D:\data\KWR0003223.nx.hdf D:\data\KWR0003224.nx.hdf

Reduction Algorithms with Fitting

Algorithm List

Export All

Find Data

Histogram Data

Regional Integration

Vertical Integration

Sample to Detector Distance

Reduction Algorithms

D:\data\KWR0003114.nx.hdf O1 Efficiency Correction - Operation properties

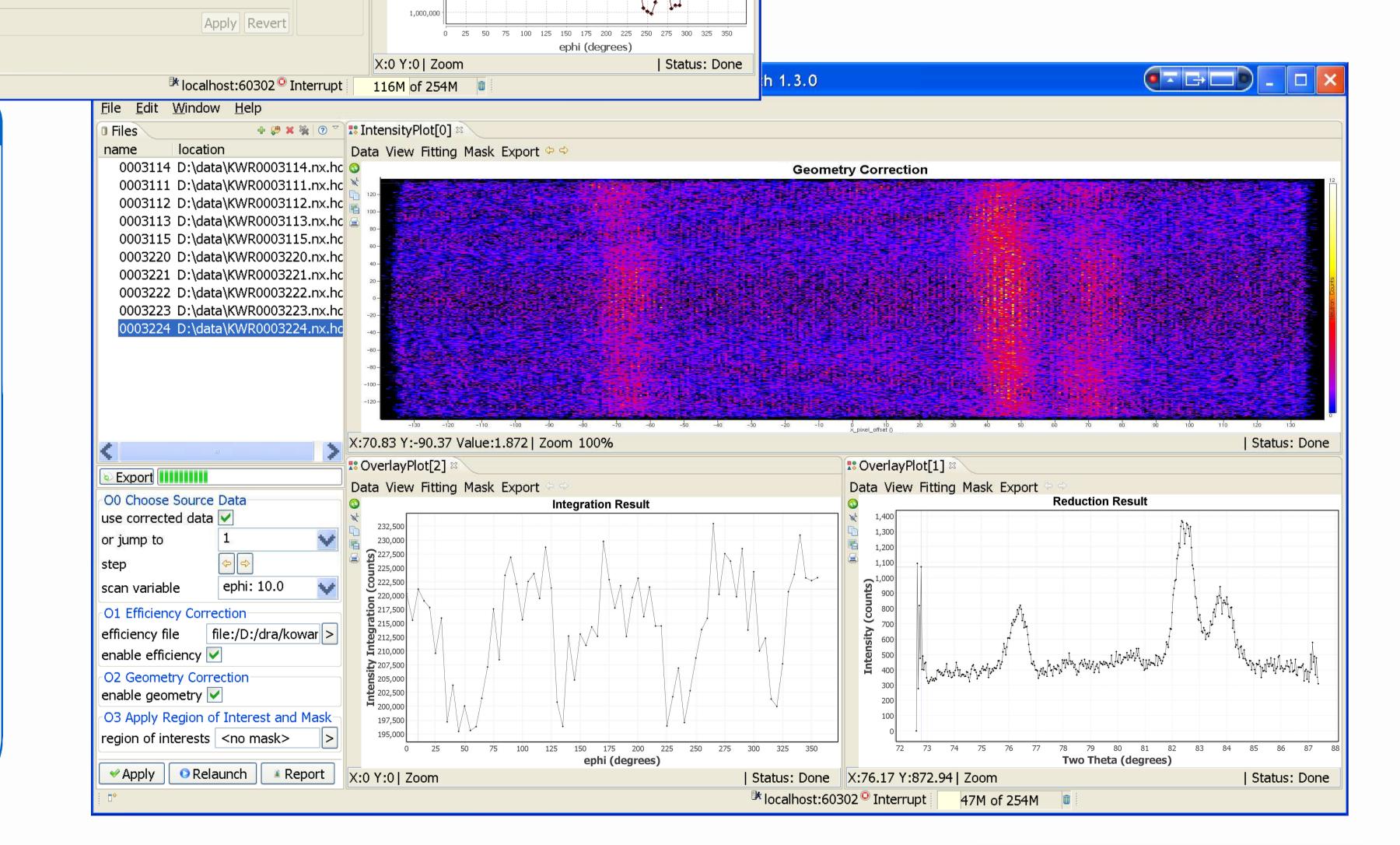
| O0 Histogram Viewer 🛚

00 Histogram Viewer - Operation properties

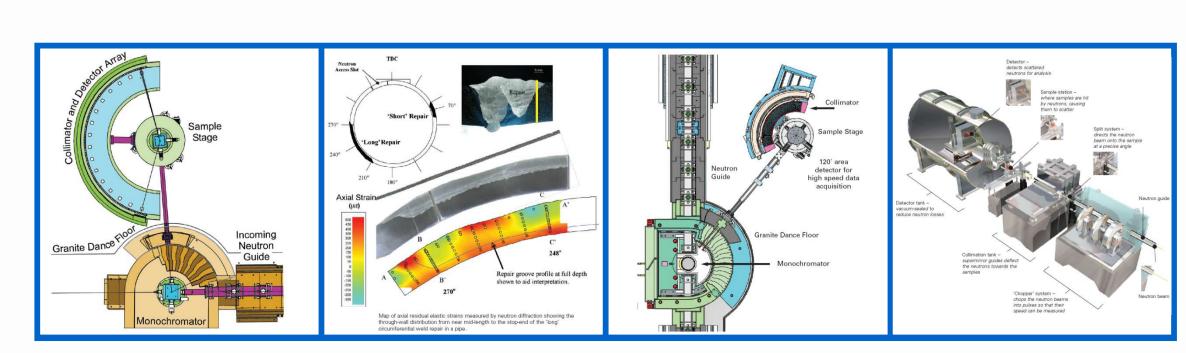
Status: Ready

Stop After Complete

- Data Analysis for Neutron Scattering Instruments
 - ➤ Quokka small angle neutron scattering
 - ➤ Kowari residual-stress diffractometry
 - > Echidna high-resolution powder diffractometry
 - ➤ Wombat high-intensity powder diffractometry
- Data Acquisition
 - > Access to histogram data
 - > Design and perform scattering experiment
 - > Instrument alignment
 - > Real-time data acquisition and reduction
- Language Supported
 - > Java, Beanshell scripting
 - > Python







🛮 TO Untitled - Reduction Algorithms - Algorithm Tas 🖾 🔌 🐧 T4 Untitled - Export All - Algorithm Task

Status: Done

file:/D:/dra/kowaridata/KWR0002102.nx.hdf >

O2 Vertical Integration

das1-kowari.nbi.ansto.gov.au

Status: Ready

Apply Revert

O0 Choose Source Data O1 Efficiency Correction O2 Geometry Correction

T1 Untitled - Reduction Algorithms with Fitting - © T2 Untitled - Histogram Data - Algorithm Task

Data Item: 0: none 🔻 💿 Run 💿 Interrupt 🖾 Plot All 🖆 Configuration

efficiency file

Default

Parameters

HM server name

HM server port

stop refreshing

Default

Data Item: 0: /entry1 V DRun O Interrupt O Plot All O Configuration

O1 Data Source

Refresh Interval (min:5.0) 10.0

