

A New Instrument for Elastic/Inelastic Scattering Studies at a Long Pulsed Source



Low Energy Neutron Source

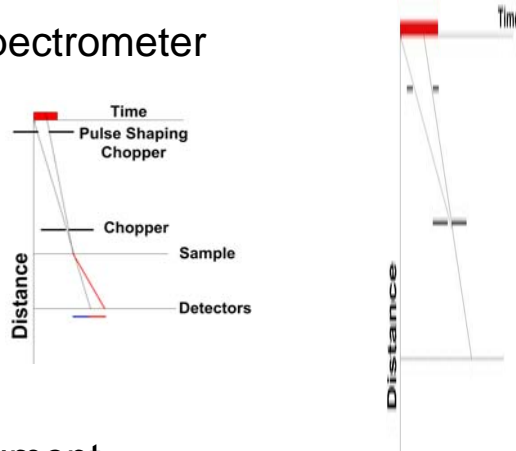
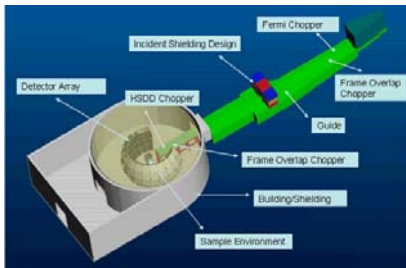
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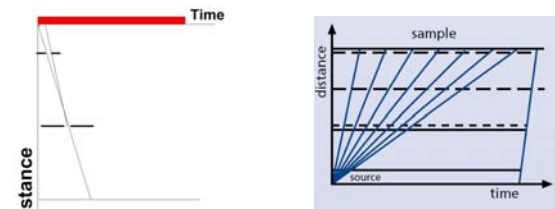
2 – Low Energy Neutron Source

Spectrometers at short pulsed spallation sources base their determination of energy on the short initial pulse length. Long pulsed neutron sources, with milli-second length pulses, are being actively considered for the SNS and the ESS and new instrument concepts will be required. We describe a new instrument for elastic scattering that utilizes both time and wavelength multiplexing.

Short Pulsed Source Spectrometer



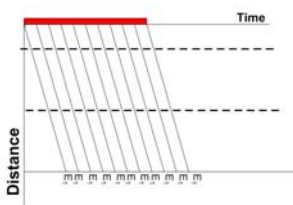
Long Pulsed Source Spectrometers



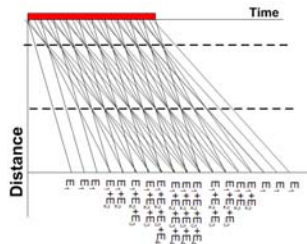
Long Pulse Options

- 1) Long Instrument using full pulse length
- 2) Short instrument using part of pulse
- 2a) Short instrument with Rep Rate Multiplication

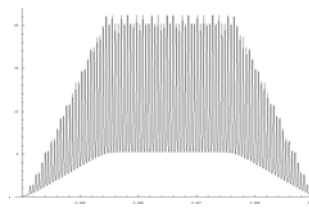
Elastic Scattering Instrument



Time Multiplexing



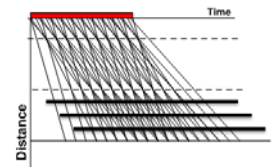
Wavelength Multiplexing



Simulated Scattering

Extraction of scattering intensities at different energies becomes a matrix inversion problem.

Incident flux associated with each peak can be individually determined



Geometry of instrument ensures elastic scattering occurs in even spaced time intervals

Inelastic scattering provides a broad smooth background

The Low Energy Neutron Source at the Indiana University Cyclotron Facility is funded by:

