



ARCS and the SNS Shared Design Activities

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SNS and IDT interactions - Part 1



- Part of the SNS Instrument Systems group's mission is to provide IDTs with the knowledge and infrastructure to build world-class neutron scattering instruments.
- Shared activities are underway concerning
 - Moderators
 - Shielding
 - Neutron Choppers
 - Optical Components
 - Detectors
 - Sample Environment
 - Data Acquisition Systems
 - Instrument Development Tools
- ARCS is ideally placed to take advantage of this knowledge because of the early and continued involvement of SNS personnel

Prime example: SNS neutron chopper group



- The SNS neutron chopper group is very active in producing working systems and gaining experience in the design, procurement and operation of all types of choppers
 - T0 choppers: 2 prototypes in operation (one for almost 1 year)
 - Bandwidth or disk choppers: Procurements in place for first articles
 - E0 or Fermi choppers: Prototype running at HRMECS
- ARCS will take advantage of this knowledge for help in selecting choppers, contacting vendors, auxiliary equipment selection, etc.
- This is one item in the ARCS cost that has low contingency due to the existing systems.

TOP1 at IPNS GPPD Instrument



E0P1 Chopper Test Facility



SNS and IDT interactions - Part 2



- Ideally IDTs contribute to more to the SNS than just money to construct an instrument
 - User expertise and support and expansion of the neutron scattering community
 - *ARCS will support postdocs, grad students, travel for experiments, etc.*
 - *Experts are engaged in IDT activities that benefit the SNS (e.g. ARCS software workshop)*
 - Joint developments
 - *CNCS will work with the SNS sample environment group*
 - New expertise in instrumentation
 - *Spin echo or high pressure groups*

ARCS contributions



- In collaboration with the SNS detector and data acquisition groups, ARCS will build a vacuum system for detector testing
 - Operation of ^3He LPSDs is necessary for the backscattering spectrometer as well as ARCS. This joint effort will validate the electronics design and its operation in vacuum.
 - ARCS will purchase 16 tubes for long term testing to discover any potential faults in the electronics, power or mounting scheme.
 - Two additional resistances of the LPSD wire will be purchase to evaluate the optimal combination of detector and preamp for fast and accurate counting.

- Software development

ARCS project end



- The ARCS IDT intends to turn over all operations of the instrument to the SNS at the end of the funded period (9/2006).
 - SNS needs to plan for instrument personnel and operation expenses
 - ARCS designs and installation drawings will conform to SNS standards to allow for upkeep
 - Status of commissioning is not yet clear
- ARCS software developments will also be given over to SNS
 - Documentation and design will conform to SNS standards
 - Plans for maintenance need to be discussed