

Work program: Instrumentation Task

(up-date ESS TMT Meeting #9, 02-07-02) *F. Mezei, R. Eccleston, Th. Gutberlet*

A number of instrumentation / instrument component issues are being intensively studied and developed at various reactor and spallation sources and within European networks (e.g. phasing of choppers, high speed choppers, detectors, etc.). There is no need to duplicate this effort within the ESS project. Starting in 2004, ESS should consider promoting and funding a selected set of key developments aimed at strategic bottlenecks.

Instrumentation work packages.

1) Update/revise ESS Volume IV.

Systematic comparisons to state of the art existing instruments to be completed and/or reviewed.
(Volume IV. authors)

Completion: Dec. 2002

2) Complete Virtual Instrument simulation studies:

- a) Ultra-high resolution, 300 m long powder diffraction instrument on LPTS (HMI, LLB)
- b) High resolution NSE spectrometer on LPTS, benchmark against pulsed source operational mode of IN15 of ILL-FZJ-HMI. (FZJ, HMI, ILL)
- c) Both cold TOF inelastic spectrometers on LPTS and SPTS, benchmark against NEAT at HMI and IN5 at ILL (HMI, ISIS)
- d) Tomography station, benchmark against existing/developing prototypes (ISIS, FRM-II)
- e) Single crystal diffraction for protein crystallography, SPTS, compare to LPTS option. (HMI, ISIS)
- f) High intensity SANS on LPTS (HMI, FZJ)
- g) High resolution (SPTS) (ISIS) and high intensity reflectometers (LPTS) (HMI)

Completion: Sept. 2003

3) Develop and test prototype spectrometers, components, subsystems

- a) Develop, test, and characterize focussing systems for high resolution SANS applications (FZJ, HMI)
- b) Evaluate prototype TOF spectrometer performance on IN500 (repetition rate multiplication, ballistic neutron guide beam delivery) (HMI, ISIS, FZJ)
- c) Study pulse timing instabilities as a function of moderator parameters on GEM. (ISIS)
- d) Magnet developments for enhanced resolution NSE (FZJ, HMI)

Completion: Dec. 2003

Resources:

The bulk of the tasks will continue to be done by ESS partners with their own resources (~ 20 FTE/yr + ~1-2 M€/yr).

Central funds are requested:

Travel funds for small information meetings / collaborations:	20 k€ / yr
Simulation expert (time shared between ISIS and HMI):	50 k€ / yr