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INSTRUMENTATION FOR INELASTIC SCATTERING EXPERIMENTS

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This session was proof that the development of instrument and techniques at neutron sources is alive and well and the plans for the next generation instruments are showing an increased degree of sophistication. A Belushkin (Dubna) started this session with a brief guided tour of the IBR-2 spectrometer suite comprising the direct geometry spectrometer DIN and the two inverted geometry spectrometer KDSOG-P and NERA-P and the related scientific activities. He also described the planned update of the NERA-P instrument with supermirrors to enable full polarisation analysis.

H Tietze-Jaensch (ISIS, KFA Jülich) then presented the proof that longitudinal scans can be performed with the ambitious ROTAX spectrometer. ROTAX uses a non-uniformly rotating analyser crystal synchronised to ISIS and a linear position sensitive detector. The development of the sophisticated motor control hardware and software is now finished and demonstration experiments have been performed. A proposal was put forward for a ROTAX mark II version located at a 30 m guide on a 10 Hz source. This would allow to run the analyser motor and its control electronics under much less severe conditions and increase therefore the reliability and flexibility of the whole system and open up new opportunities.

J Mesot from the PSI/University of Saarbrücken Team presented the design for the time-of-flight spectrometer FOCUS which is being built at SINQ. The distance of its double focusing monochromator from the supermirror guide end is variable and thus will allow to operate the instrument either in time focused (TF) or monochromator focused (MF) mode. In MF mode FOCUS will give good resolution and good intensity over a wide wave length band and in TF mode it will have 70% of the intensity of IN6 at equal resolution. The use of a second chopper will make it possible to select higher order reflections from the monochromator (graphite or mica) and thus increase further the energy resolution.

V Kazimirov presented plans for a high intensity crystal analyser spectrometer for spectroscopic studies - MAINS - at the spallation neutron source at the Moscow Meson factory. The design is based on the proposed upgrade of the TFXA spectrometer at ISIS and involves two full circle analyser banks in transmission and reflection geometry together with two ring detector arrays. Careful resolution considerations suggest that employing 2 mm thick scintillator detectors rather than 8 mm diameter ^3He detector tubes will improve the spectrometer resolution.

F Mezei presented a comparison of crystal monochromators versus time-of-flight (tof) monochromators for use on reactor and long pulse spallation sources. For example, a tof monochromator on a triple-axis spectrometer, combined with a number of analyser crystals and a position sensitive detector can provide a whole set of constant-Q scans simultaneously, instead of only a single one (see also the RITA project in Risø). By installing a second fast chopper close to the sample with the frequency being a multiple integer of the monochromating chopper, a set of short pulses with different wavelengths can be obtained leading to a repetition rate multiplication.