GRAS$_{ans}$P, D33 and parametric and complex data sets

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GRAS$_{ans}$P and D33 are the two mistresses in my life. *GRAS$_{ans}$P* is Matlab™ based 'Graphical Reduction and Analysis Sans Program' particularly tailored for SANS data treatment of large, parametric or complex data sets. *GRAS$_{ans}$P* has been available for users of SANS instruments at ILL (France), PSI (Switzerland), NIST (USA), HMI (Germany), Juelich/Munich (Germany) and is distributed as both Matlab™ 'm-code' or as a stand alone, freely distributable compiled software package. The *GRAS$_{ans}$P* web site address is www.ill.fr/lss/grasp/.

D33 will be a third SANS instrument at the Institut Laue Langevin. Modern trends in materials science, physics and in particular nano-structured materials require that D33 should provide both high resolution and a wide dynamic range of measured scattering vector, *q*. In a 'monochromatic' mode a velocity selector and flexible system of inter-collimation apertures will define the neutron beam. A double chopper system will enable a 'time-of-flight' (TOF) mode of operation allowing an enhanced dynamic *q*-range (q_{max}/q_{min}) and flexible wavelength resolution. Two large multitube detectors will extend the dynamic *q*-range further giving q_{max}/q_{min} ~20 in monochromatic mode and a massive $q_{max}/q_{min} > 1000$ in TOF mode. Beam polarisation and ^{3}He spin analysis will facilitate and expand studies of magnetism and allow a more quantitative analysis of spin incoherent samples. The position of D33 will be such as to allow high magnetic fields at the sample position.

I will present examples of parametric data analysis using *GRAS$_{ans}$P* such as rocking curves or series measurements as a function of external parameters such as temperature, magnetic field etc. I will also highlight requirements for future data analysis with the advent of D33 such as parametric analysis and complex data sets from a SANS instrument working in TOF mode.