

Neutron imaging options for the Institut Laue Langevin (ILL)

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The high flux reactor source at the ILL, Grenoble provides the highest continuous neutron fluxes current available worldwide. To exploit this position in 2002 the NEUTROGRAPH instrument for dynamic radiography and tomography was constructed. It is set up at the H9 beam line was operational since October 2002, as a collaboration between the ILL and the University of Heidelberg. With a high-intensity thermal neutron beam of about $3 \times 10^9 \text{ n cm}^{-2} \text{ s}^{-1}$, NEUTROGRAPH is dedicated to real-time, snapshot and stroboscopic radiography with time resolution down to a few microseconds, as well as dynamic tomography on a sub-minute time scale. The high intensity also allows the visualization of thick and strongly absorbing materials. This allows investigation of larger samples with extremely low contrast, as in some fields of material science and archaeology. However the neutron imaging field has evolved over the past decade and hence there is an opportunity for a new generation of instrument to be conceived that can exploit the high flux to help push the current boundaries of spatial and time resolution. As part of this process, a concept for a new instrument has been developed but requires significant contribution from the community. An overview of the state of the art of imaging at the ILL will be presented, followed by a vision concept for a new instrument, IMAGEN. Feedback from the community will be greatly appreciated to direct the focus of the concept which will be advanced to a proposed new instrument at the ILL.

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