

Improvement in scattering experiments using pixel detectors.

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Moving from laboratories experiments to synchrotron experiments has increased the available intensities by some orders of magnitude allowing time resolved experiments but above all it has enhanced the resolution of scattering experiments. New experiments become feasible, they induce new requirements for detectors : counts to measure within a single exposure can range over more than six orders of magnitudes by example.

The hybrid pixel detectors seem to be a promising way to overpass the experimental limits associated with the present detectors. Different projects using this technology are under development, they are focussed on various application fields as medical imaging, protein crystallography... The XPAD detector was designed to fit the requirements of material science scattering application.

Results obtained with XPAD-1 prototype detectors [1] allow to clarify the new limits that will be achievable in scattering experiments using this kind of detectors. The realization of these detectors will also point out some technical or physical problems encountered and allow to precise some points in the design of the new generation of pixel detectors.

References

[1] - J.-F. Berar and al., J. Appl. Cryst. (2002) 35, 471-476