APD Detectors: Implementation and Applications

Alfred Q.R. Baron
SPring-8: RIKEN & JASRI

The use of APD detectors will be discussed both in general [1] and in the context of two recent applications [2][3]. The general comments focus on the need for multi-element detectors, and, the electronics to handle many channels in parallel. Several detectors will be described (including 8 and 16 element detectors), and the present status of work in collaboration with the ESRF [4]. The talk will then focus on applications, including nuclear inelastic scattering with ^{201}Hg [2] which has a very short (< 1ns) lifetime and nuclear forward scattering and relaxation in Dy spin-ice where the hyperfine beat frequency becomes rather fast (beat periods < 1ns) [3].

[1] A. Q. R. Baron, S. Kishimoto, J. Morse, and J.-M. Rigal, Journal of Synchrotron Radiation **13**, 131 (2006).

[2] D. Ishikawa, A. Q. R. Baron, and T. Ishikawa, Physical Review B **72**, 140301(R) (2005).

[3] J. P. Sutter, S. Tsutsui, R. Higashinaka, Y. Maeno, O. Leupold, and A. Q. R. Baron, Physical Review B **75**, 140402(R) (2007).

[4] T. Deschaux and the Nuclear Resonance Group.