

Andrew Boston  
University of Liverpool

Title: Digital detection of radiation signatures

Abstract:

For decades, the study of the gamma-ray decay of the quantal states of the atomic nucleus has played a pivotal role in discovering and elucidating the wide range of phenomena manifested in its structure. Each major technical advance in gamma-ray detection devices has resulted in significant new insights into nuclear science. The use of large volume, high purity germanium detectors to study the atomic nucleus has been key to the success of this strategy. These science goals have driven the development of detector technology which has also benefited from the parallel development of digital readout electronics capable of extracting every last piece of information from these detector systems. Our understanding of these detectors and how to interpret the complex signal shapes which are recorded has revolutionised this field of research allowing high count rate, radiation damage robust solutions to be deployed. This has enabled the delivery a science programme which matches the ambitions of the next generation of accelerator facilities being build worldwide. The techniques developed for handling the digital readout from these sensors and also from fast neutron scintillators will be discussed in the context of this research and also a range of complementary applications will be highlighted.