Use of List-Mode Data Acquisition Systems for Performing Benchmark Subcritical Neutron Measurements

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What is List-mode Data Acquisition?

Recording a data set that can include the following information for each detection event:

Timing information
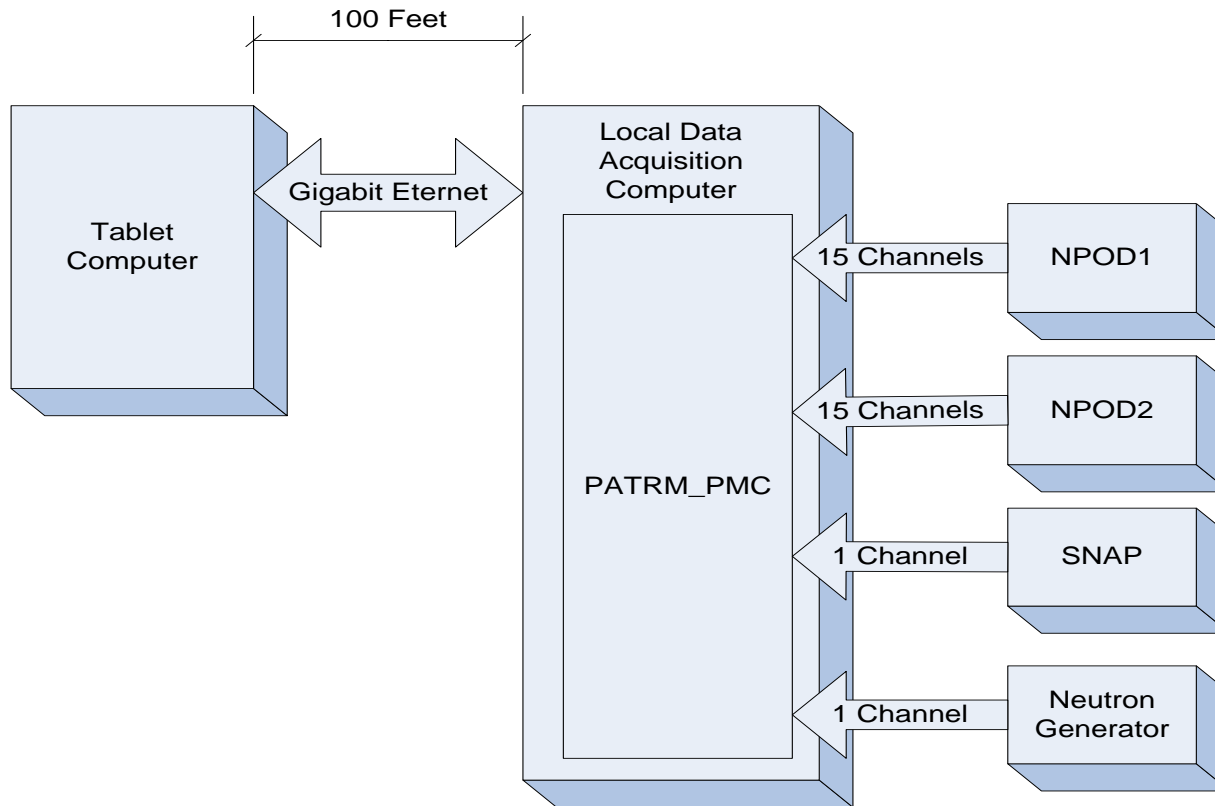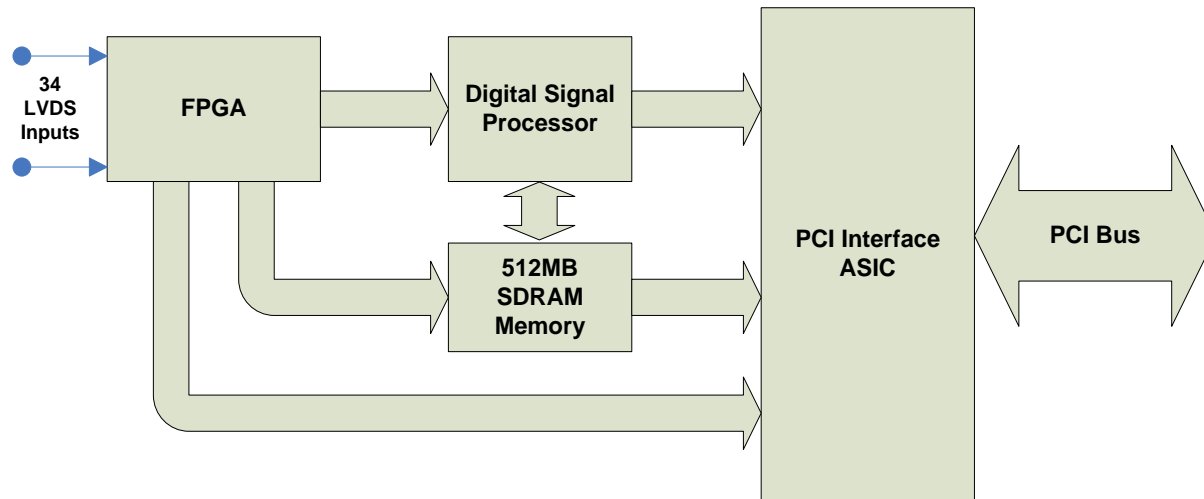Channel number
Pulse height information
Particle type
Etc.

Data List allows different software algorithms to process the data.

Original Data stream is kept intact.

DAQ System Block Diagram

Basic Block Diagram of the PATRM/PMC Card Design

34 LVDS Inputs

FPGA

Digital Signal Processor

512MB SDRAM Memory

PCI Interface ASIC

PCI Bus

Basic design can be engineered to just about any form factor.

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PATRM_PMC Photograph

Labview Based Control Interface

Real World verses Modeling Domain
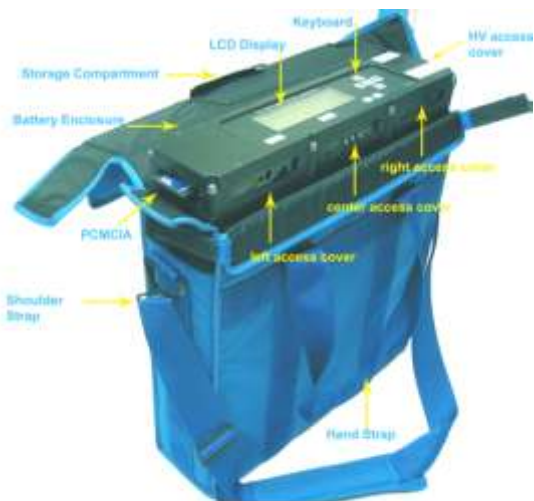
Neutron Multiplication Pod III

Environmental effects

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Comparison of Results

Experimental List to Computed List Comparison

Use of Inference Models

Use of Computed Keff

How does "Benchmark" community best utilize these techniques for the evaluation process?

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