Design of Mesh-signal Readout Electronics for PandaX-III Prototype TPC

Zhen Chen

MRC acquire all mesh signals and generates individual ‘Mesh-trigger’ signals

MRC sends trigger signals to DCM

The trigger signals will be distributed to 4 FECs

Requirement:
INL ≤ 3.2%, RMS noise ≤ 6 fC with 10 pC range

Design:
41 analog channels
11 quad, 12-bit, 50MSPS, serial, LVDS A/D
1 FPGA

Test:
8 input channels with 2 ADCs has been welded now
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INL < 3% with 5.5pC

Noise (RMS) vs capacitor value < 0.9fC with 100pF

Noise distribution of 8 channel < 1.25fC with 1μs peaking time with 5.5pC
Introduction

1. Introduction

2. Readout Requirements

3. Design of MRC

Description of Readout Electronics

Performances

Description of MRC

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