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U.S. DEPARTMENT OF ENERGY

Charge Readout Requirements & Interfaces

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ND-LAr Engineering Meeting

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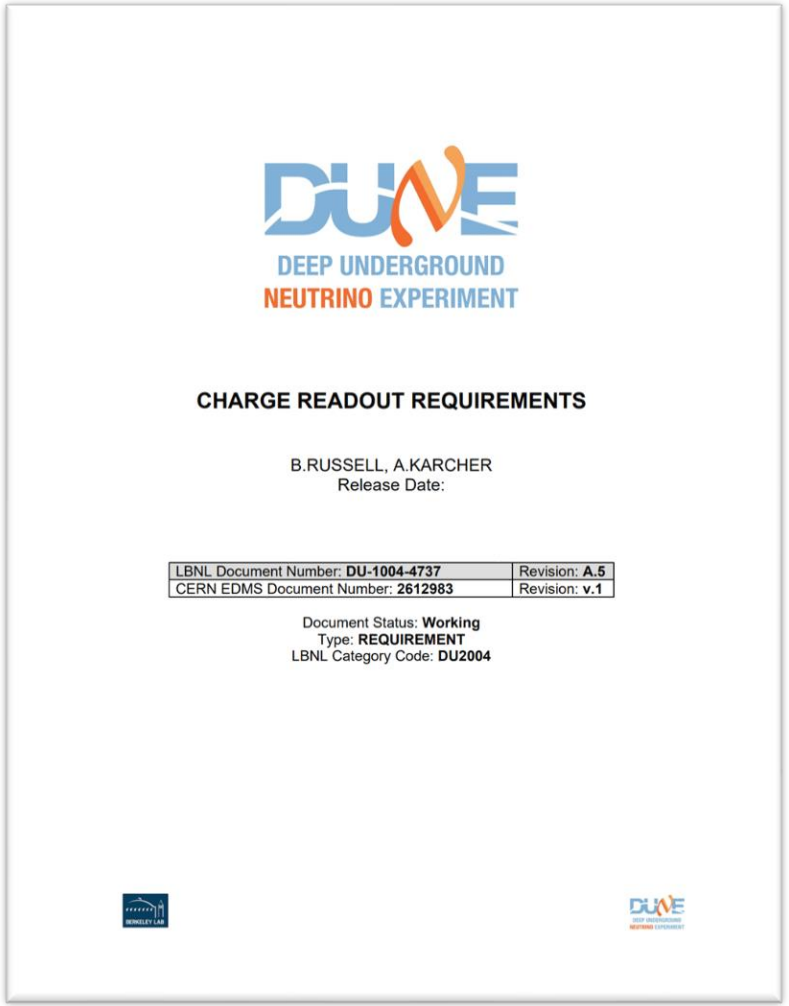
Document Name	EDMS Number
Requirements	2612983
Integrated TPC	2458075
Integrated TPC to TPC Assembly & Testing	2610895
Integrated TPC to TPC integration & Installation	2610896

Requirements

EDMS no. 2612983

Defines charge readout subsystem requirements – ASICs, anode tiles, cables, warm controllers, and feedthroughs

Status: mostly complete; on-going studies using simulation & Module-0 data for requirement refinement



DEEP UNDERGROUND NEUTRINO EXPERIMENT

CHARGE READOUT REQUIREMENTS

B.RUSSELL, A.KARCHER
Release Date:

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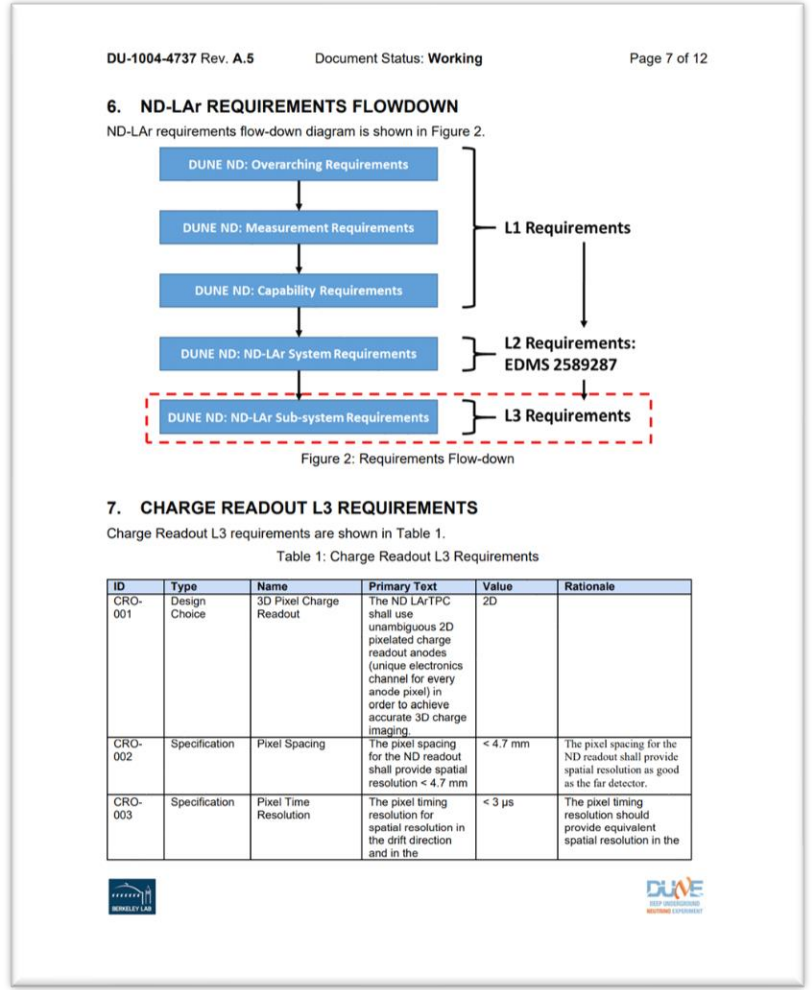


6. ND-LAr REQUIREMENTS FLOWDOWN

ND-LAr requirements flow-down diagram is shown in Figure 2.

Figure 2: Requirements Flow-down

7. CHARGE READOUT L3 REQUIREMENTS

Charge Readout L3 requirements are shown in Table 1.

Table 1: Charge Readout L3 Requirements

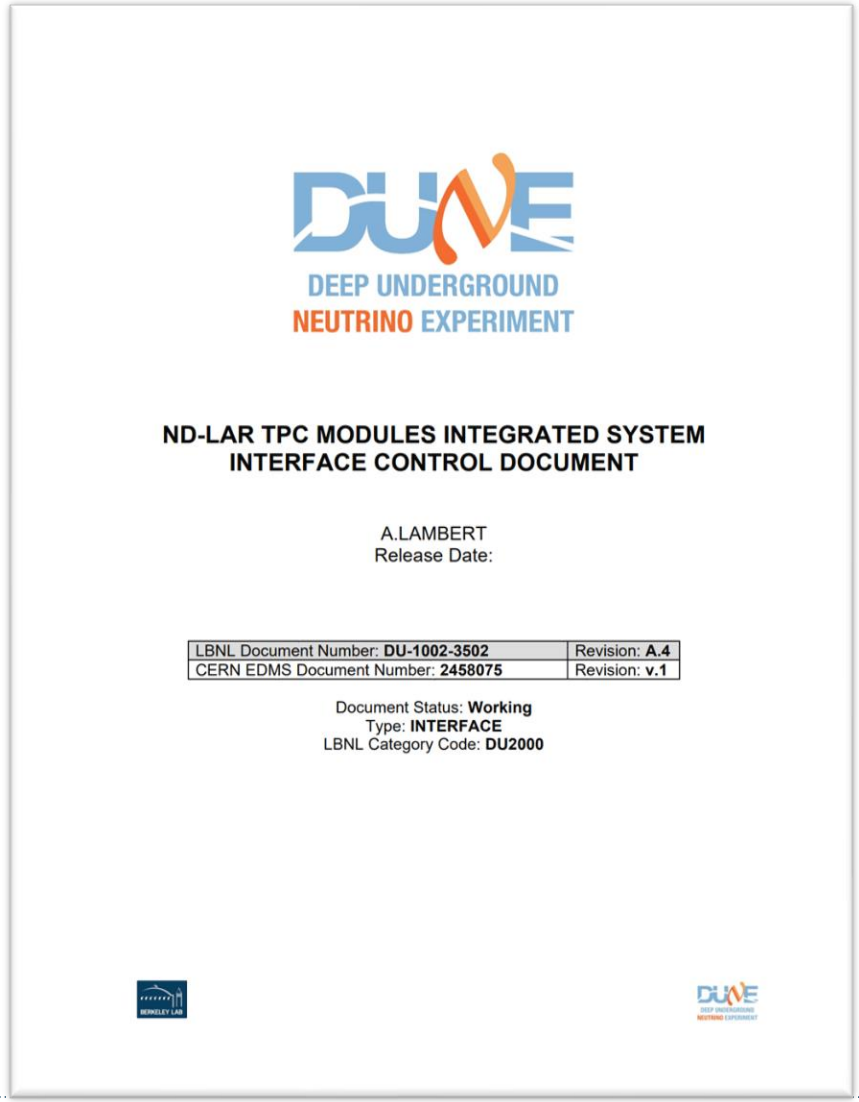
ID	Type	Name	Primary Text	Value	Rationale
CRO-001	Design Choice	3D Pixel Charge Readout	The ND LArTPC shall use unambiguous 2D pixelated charge readout anodes (unique electronics channel for every anode pixel) in order to achieve accurate 3D charge imaging.	2D	
CRO-002	Specification	Pixel Spacing	The pixel spacing for the ND readout shall provide spatial resolution < 4.7 mm	< 4.7 mm	The pixel spacing for the ND readout shall provide spatial resolution as good as the far detector.
CRO-003	Specification	Pixel Time Resolution	The pixel timing resolution for spatial resolution in the drift direction and in the	< 3 µs	The pixel timing resolution should provide equivalent spatial resolution in the

Interfaces

EDMS no. 2458075

Defines inter-subsytem agreed deliverables/requirements

Status: incomplete – need to setup meetings with subsystem managers



DEEP UNDERGROUND NEUTRINO EXPERIMENT

ND-LAR TPC MODULES INTEGRATED SYSTEM INTERFACE CONTROL DOCUMENT

A.LAMBERT
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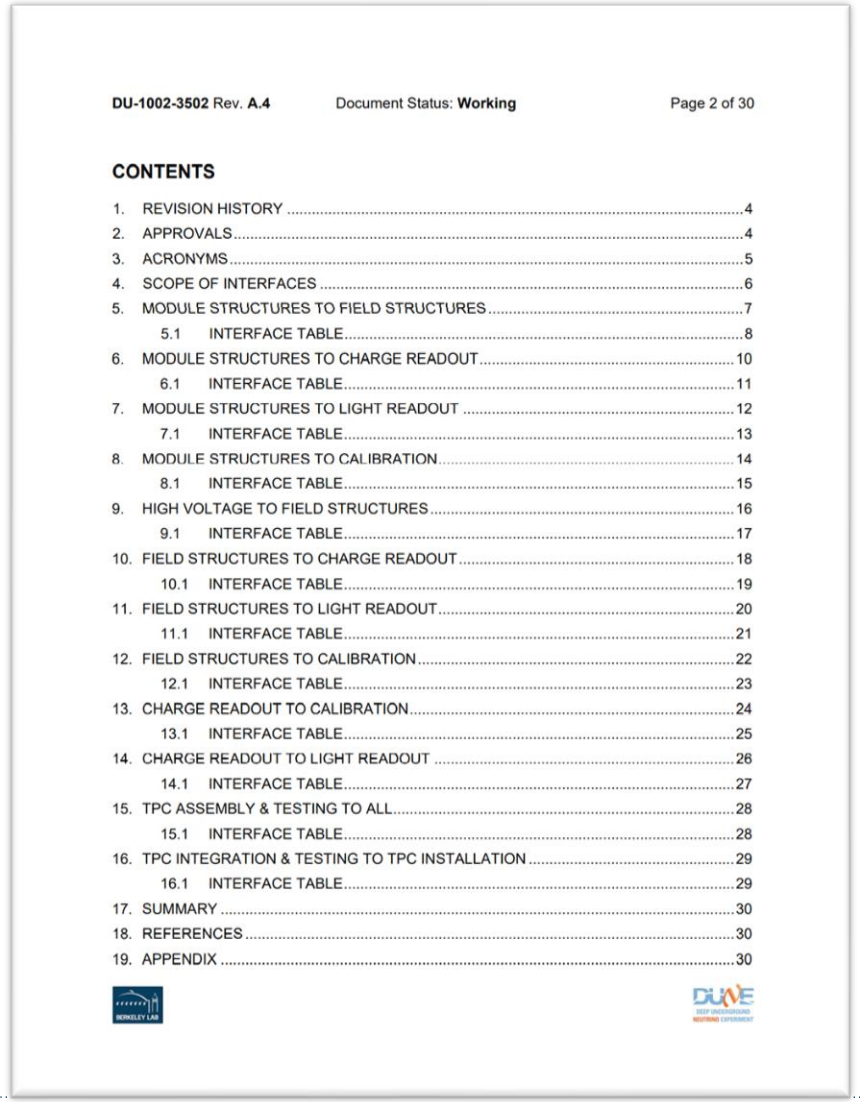

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Next Steps

Requirements – Complete dedicated physics-level studies for select key requirements

Interfaces – Meet with ND-LAr subsystem managers to converge on interface requirements