

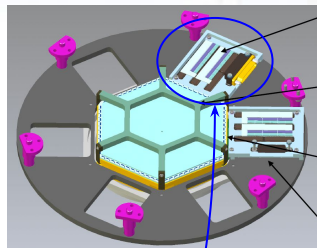


CDFG Readout Update

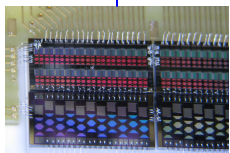
Detector Layout Workshop
March 31, 2021

Zeesh for 1.04, RO WG

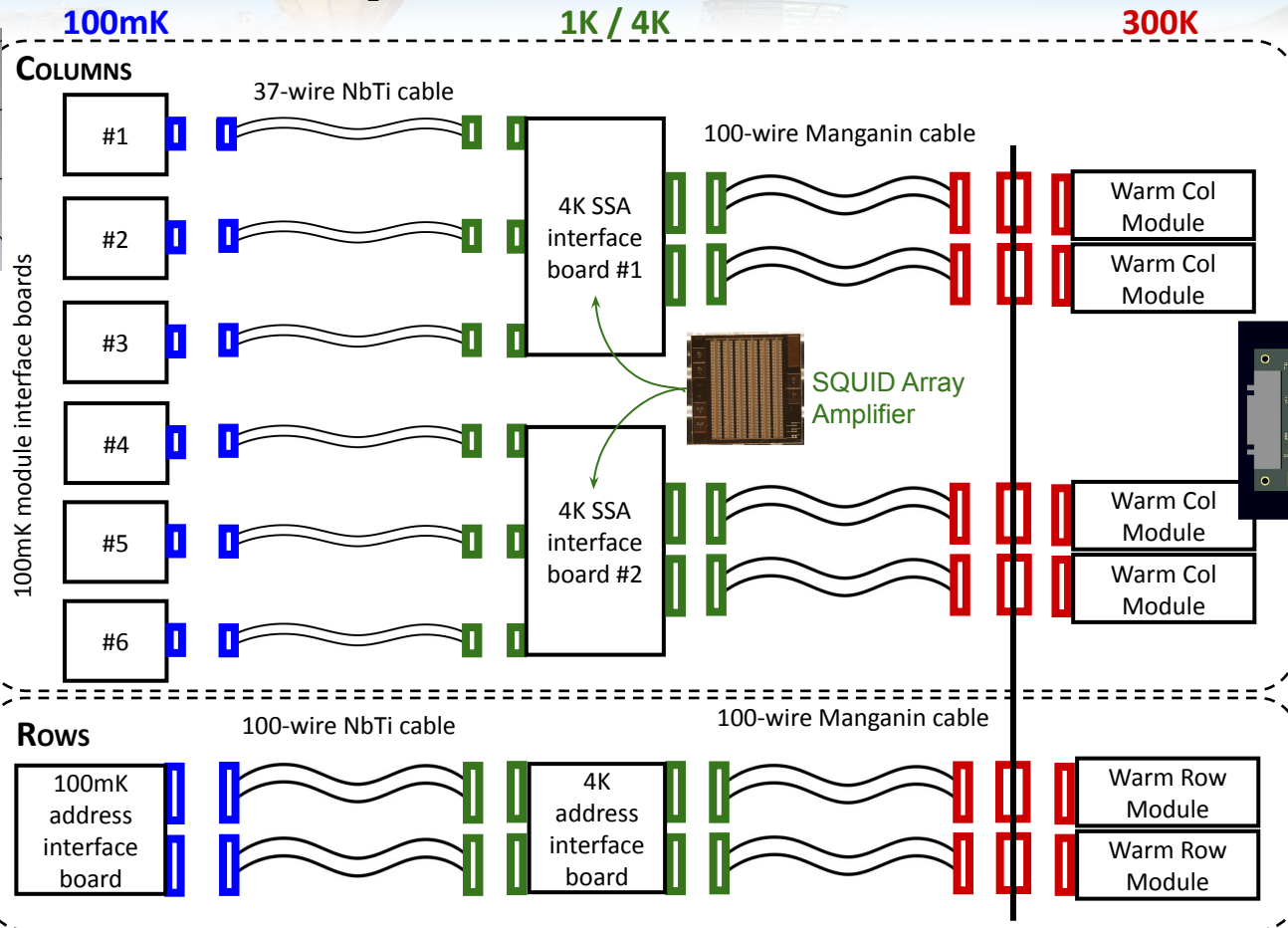
CDFG Readout Implementation Schematic



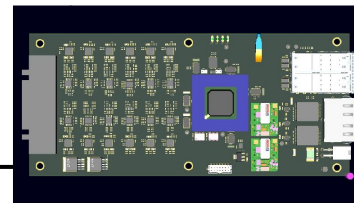
100mK Readout units for CDFG testing



SQUID multiplexer and TES bias chips



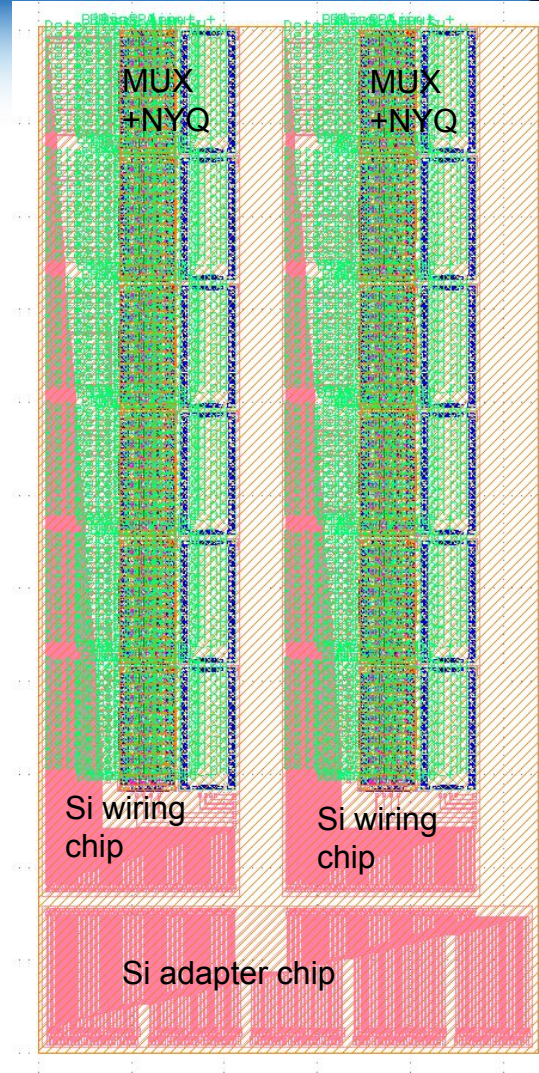
Cryogenic cabling



Warm electronics modules

CDFG Readout Status

- Glenair connectors & Tekdata cables
 - Critical quantities ordered to enable first chain test until FY21 funds arrive
- Test stand mechanical/thermal components
 - Design in progress
- 100mK RO module
 - Design work resumed after progress in defining CDFG detector/readout interface. Required redesign of NYQ chips and introduction of Si adapter chips (more in Gunther's talk later)
 - Enclosures: Continuing to work with 1.05
 - Awaiting update from NIST on MUX and NYQ delivery status
- 4K SAA board
 - Design complete; proto fabrication
 - 4K SAAs shipped from ANL to NIST for packaging
- Estimated delivery to FNAL now 8/20



CDFG Readout Schedule detail (1)

ID	Task Name	Duration	Start	Finish
1	<u>Project Start</u>	<u>102 days</u>	<u>Thu 4/1/21</u>	<u>Fri 8/20/21</u>
2	Project Start	0 days	Thu 4/1/21	Thu 4/1/21
3	Glenair Connectors and Tekdata Cables	50 days	Thu 4/1/21	Wed 6/9/21
4	Procure/Receive Glenair Cable Connectors	20 days	Thu 4/1/21	Wed 4/28/21
5	Procure/Receive Glenair Board Connectors	30 days	Thu 4/15/21	Wed 5/26/21
6	Procure/Receive Tekdata Cables	30 days	Thu 4/29/21	Wed 6/9/21
7	Test Stand Components	60 days	Thu 4/1/21	Wed 6/23/21
8	Design vacuum flange	1 day	Thu 4/1/21	Thu 4/1/21
9	Procure/Receive Vacuum flange	30 days	Thu 5/13/21	Wed 6/23/21
10	Design MCE stand, 4K bracket, thermal blocks	30 days	Thu 4/1/21	Wed 5/12/21
11	Procure/Receive MCE stand, 4K bracket, thermal blocks	20 days	Thu 5/13/21	Wed 6/9/21
12	Assemble 300K cables for MCE	10 days	Thu 6/10/21	Wed 6/23/21
13	100mK Module	65 days	Thu 4/1/21	Wed 6/30/21
14	Design/fab Si Wiring and Adapter chips	20 days	Thu 4/1/21	Wed 4/28/21
15	Procure Siwafers/masks	40 days	Thu 4/29/21	Wed 6/23/21
16	Test Si Wiring and Adapter chips	5 days	Thu 6/24/21	Wed 6/30/21
17	Design Column Module	30 days	Thu 4/1/21	Wed 5/12/21
18	Procure/receive Nyquist/Mux chips	45 days	Thu 4/1/21	Wed 6/2/21
19	Fabricate Column Module	15 days	Thu 5/13/21	Wed 6/2/21
20	Assemble Column Module	5 days	Thu 6/3/21	Wed 6/9/21
21	Bench Test Column Module	5 days	Thu 6/10/21	Wed 6/16/21
22	Design Row Module	30 days	Thu 4/1/21	Wed 5/12/21
23	Fabricate Row Module	15 days	Thu 5/13/21	Wed 6/2/21

Work in progress. Work started before 4/1/21 but project file starts then (items ordered before are either in hand or the remaining duration to receive is shown)

CDFG Readout Schedule detail (2)

ID	Task Name	Duration	Start	Finish
24	Assemble Row Module	5 days	Thu 6/3/21	Wed 6/9/21
25	Bench Test Row Module	5 days	Thu 6/10/21	Wed 6/16/21
26	100mK Modules bench test complete	0 days	Wed 6/16/21	Wed 6/16/21
27	4k SSA Module	60 days	Thu 4/1/21	Wed 6/23/21
28	Design 4K SSA Module	20 days	Thu 4/1/21	Wed 4/28/21
29	Procure/receive SSAs	45 days	Thu 4/1/21	Wed 6/2/21
30	Fabricate SSA Module	30 days	Thu 4/29/21	Wed 6/9/21
31	Assemble SSA Module	5 days	Thu 6/10/21	Wed 6/16/21
32	Bench Test SSA Module	5 days	Thu 6/17/21	Wed 6/23/21
33	Bench Test SSA Modules complete	0 days	Wed 6/23/21	Wed 6/23/21
34	Mechanical Enclosures	50 days	Thu 4/1/21	Wed 6/9/21
35	Design 100mK enclosure	40 days	Thu 4/1/21	Wed 5/26/21
36	Procure/receive 100mK enclosure	10 days	Thu 5/27/21	Wed 6/9/21
37	Testing on chamber	40 days	Thu 6/24/21	Wed 8/18/21
38	Installation on chamber	10 days	Thu 6/24/21	Wed 7/7/21
39	Testing on chamber	30 days	Thu 7/8/21	Wed 8/18/21
40	Testing on Chamber complete	0 days	Wed 8/18/21	Wed 8/18/21
41	Additional Parts and Modules	80 days	Mon 5/3/21	Fri 8/20/21
42	Receive FY21 funds from LBNL and be available for charging	0 days	Mon 5/3/21	Mon 5/3/21
43	Procure connectors/cables/components	50 days	Mon 5/3/21	Fri 7/9/21
44	Assemble modules	10 days	Mon 7/12/21	Fri 7/23/21
45	Test modules	20 days	Mon 7/26/21	Fri 8/20/21
46	Shipping of 100mK and 4K parts	0 days	Fri 8/20/21	Fri 8/20/21