

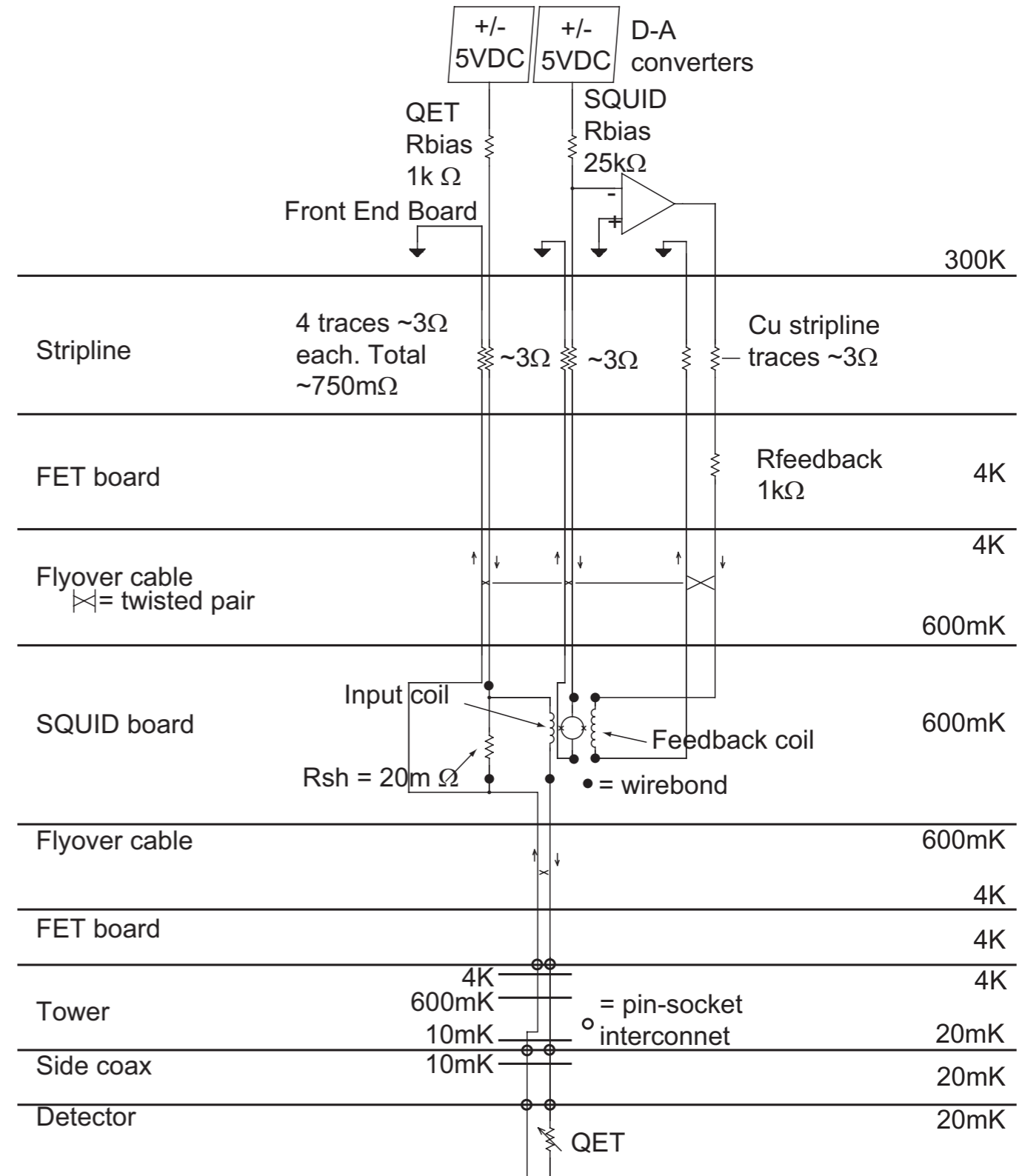
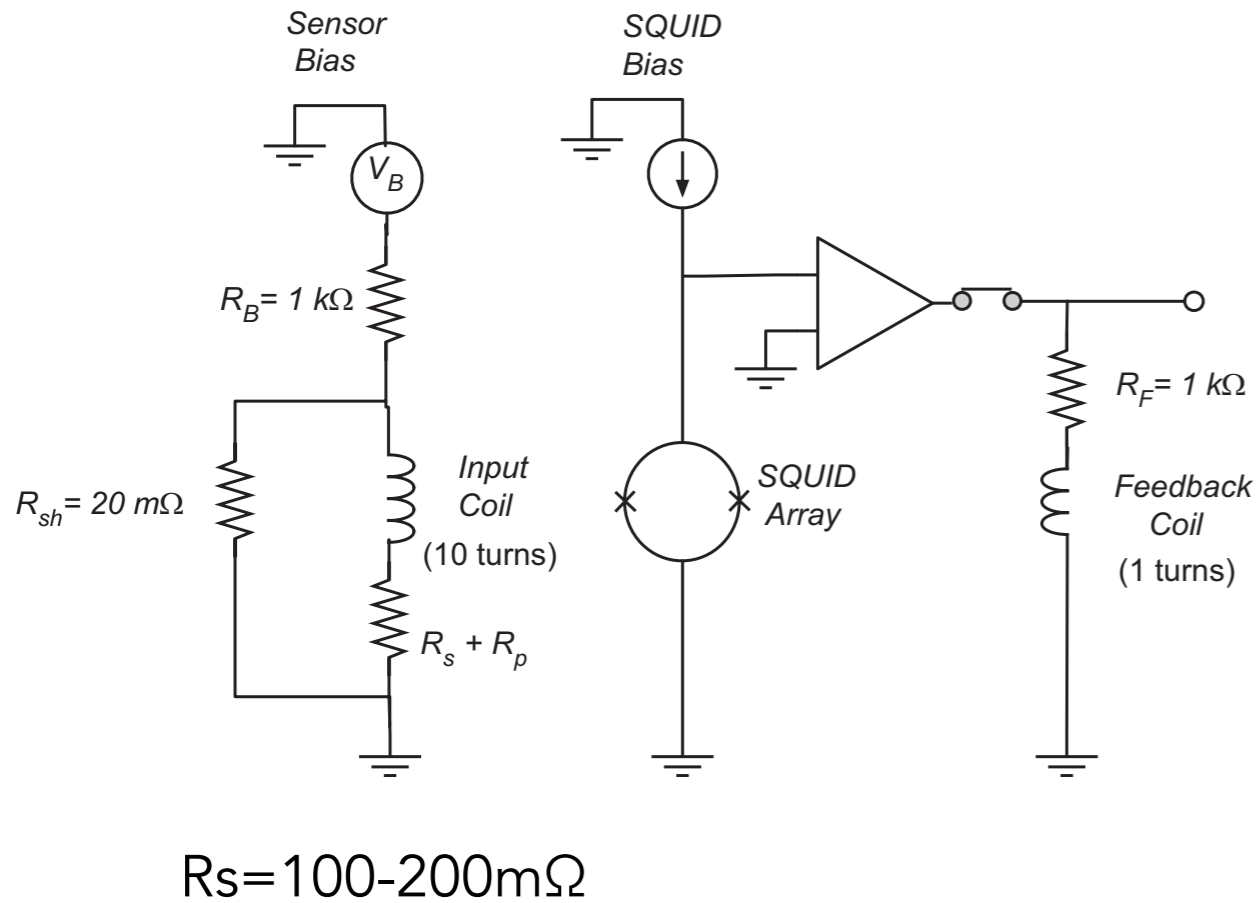
Towards our SQUID electronics for TES readout

Raul Hennings-Yeomans
Weekly meetings
UCB Weak Interactions
June 21, 2013

Introductory remarks

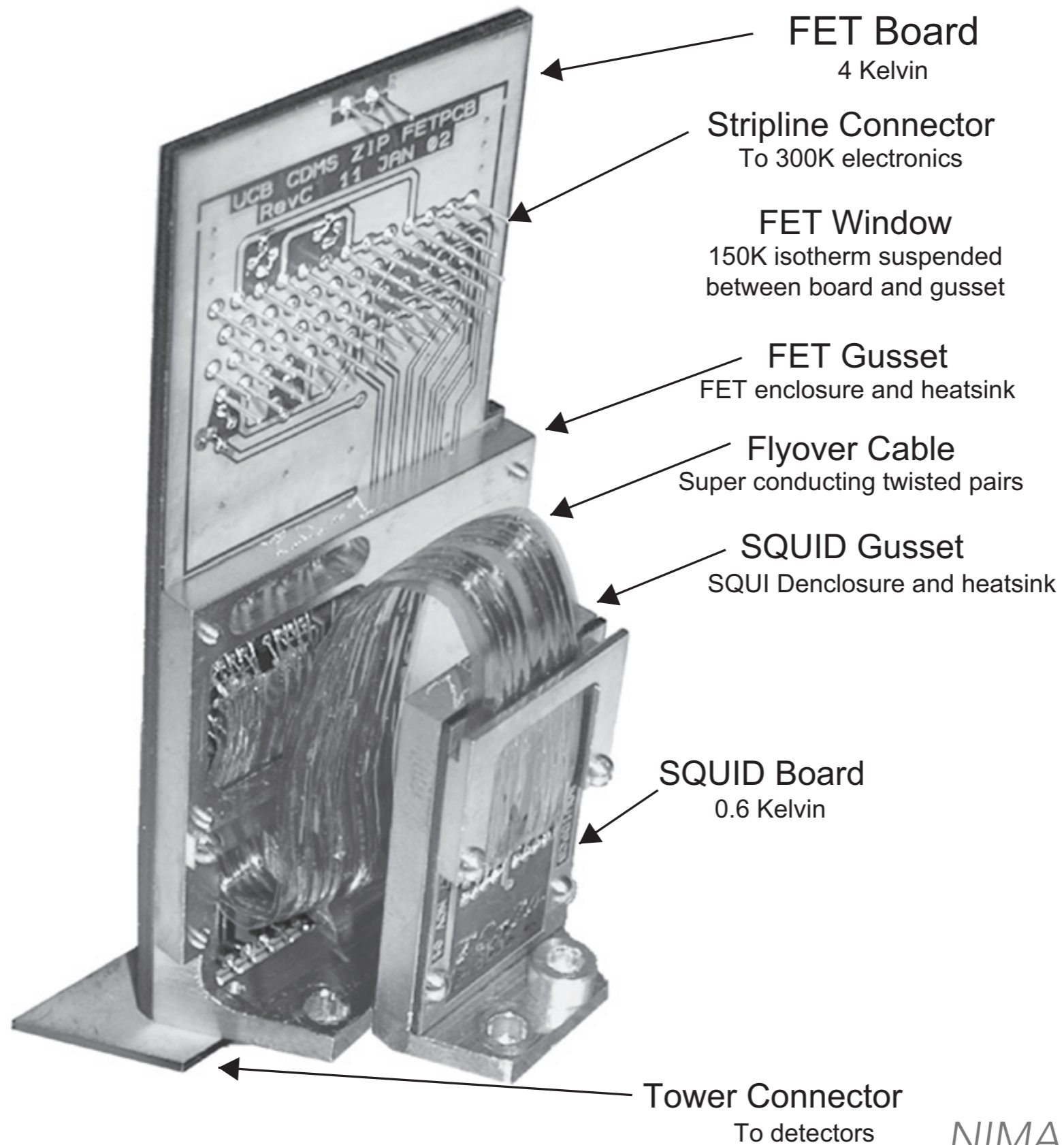
- We met with Nader to see how much we can collaborate with CDMS
- May borrow a SQUID board from them as well as room temp electronics for it. If SQUID board not available, will go to Kent Irwin.
- Probably will borrow a detector with a known T_c of 68mK to check in our setup.
- Mentioned interest in helping us doing runs (“piggybacking”) in the 75uW fridge they have equipped with SQUID electronics already.
- Nader confirmed the witness sample produced at TAMU could be made a light detector with minimal fabrication touches.

Example of Phonon Readout



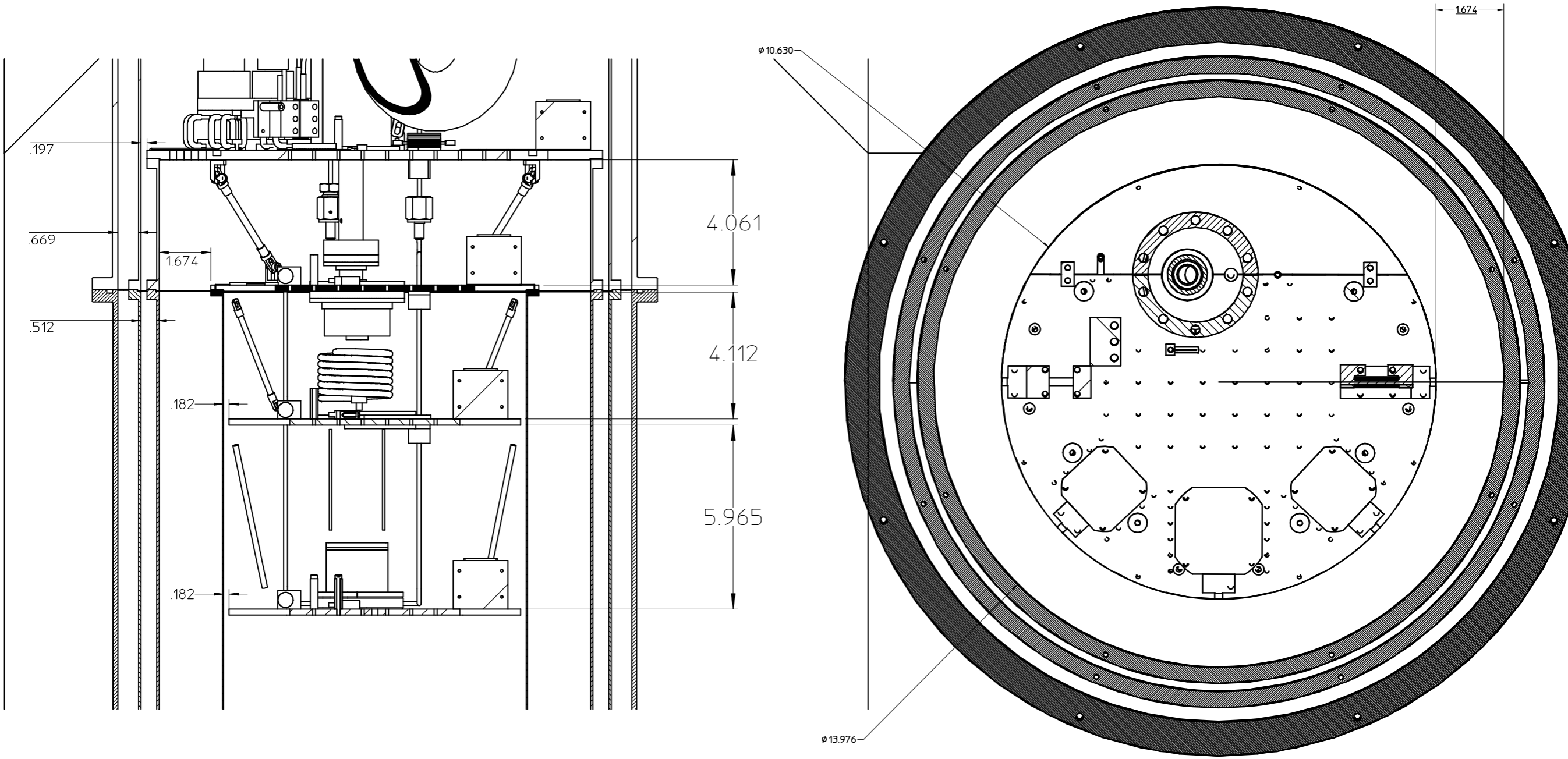
NIMA 591 (2008) 476-489

The SQUID board



NIMA 591 (2008) 476-489

Space in the 600mK plate



To do list

- a)** Fitting on top of fridge, feethroughs
- b)** Wiring (6 wires/TES, NbTi from MC-600mK, constantan 600mK-300K)
- c)** SQUID board (cold hardware)
- d)** SQUID chip (Nader will see if we can use one of theirs)
- e)** Front End Board for SQUID room temp electronics and rack (9U, VME)
- f)** Mu-metal shield

On top of the fridge, the fitting to standard KF

- One option is to make a hole on the blank ports that we already have and epoxy a standard KF-25 to KF-50 adapter
- Another option to buy one of these from Oxford Cryo. (quote arrived, \$325/KF-50, \$395/KF-40)
- If we fit the Fischer connectors (that we already have) to a standard KF we could still use them instead of the D-connectors (for example making two holes to a standard KF-50 blank to install the Fischer feedthroughs).



\$325



15x2 Pins

\$675

Wiring: aim for 5 TES

- From Mixing Chamber to 600mK plate: NbTi, 5 TES x 2 = 10 wires
- From 600mK to 300K constantan: 5 TES x 6 = 30 wires

CRYOBITZ Cryogenic Laboratory Spares


The online ordering service from ICEoxford

- Expert advice
- Outstanding service
- Fast delivery

+44 (0)1993 706 444

Items in Your Basket: 0 Total: \$0.00 Your Basket

Cryogenic Ribbon Cable



High quality cryogenic woven loom for all low temperature installations.

These looms are woven from twisted pairs of insulated wires and are reinforced with threads made from high strength Nomex®. Width 5mm x 0.6mm thick. Available per meter or supplied with either Fischer or miniature D type connectors.

More information:
sales@iceoxford.com

Available in the following:

Material 42 SWG wire (0.1 mm)	Format	Code	Price	Qty	Length(m)	Basket
Constantan	12 tw pairs	ICEcrw01	\$46.48	1	1	Add »
Constantan/Copper	9 tw pairs + 3tw pairs	ICEcrw02	\$49.80	1	1	Add »
Copper	12 tw pairs	ICEcrw76	\$43.16	1	1	Add »
Constantan	2 tw pair	ICEcrw03	\$41.50	1	1	Add »
NbTi	12 tw pairs	ICEcrw04	\$156.04	1	1	Add »
Manganin	12 tw pairs	ICEcrw05	\$53.12	1	1	Add »
Constantan/NbTi	9 tw pairs + 3 tw pairs	ICEcrw28	\$POA	1	1	Add »

Mu-metal shield

- In order to provide an reduced ambient magnetic field to the SQUIDs, need mu-metal shield around the OVC.
- About ~\$2000 (according to Nader)
- Began looking at several companies that make them, but need to ask for specific quote.