

# Control

Stepping motor

and

Displacement sensor

and

Actuators

Dan Chen

2013/11/26 Cryo-payload meeting

# Test of actuator for initial alignment in cryogenic temperature

82	1.5.1	Stepping motor (ICRR)	134日	13/11/18 (月) 14/03/31 (月)	8%	8%	Chen Dan
83	1.5.1.1	Candidate list	27日	13/12/05 (木) 13/12/31 (火)	50%	50%	Sekiguchi Takanori, Takahashi R., Chen Dan
84	1.5.1.2	Procurement of candidates	78日	13/11/29 (金) 14/02/14 (金)	0%	0%	Takahashi R., Yamamoto Kazuhiro
85	1.5.1.3	Preparation for candidates test	26日	13/11/18 (月) 13/12/13 (金)	0%	0%	Chen Dan, Student from AEI Hannover
86	1.5.1.4	Test at cryo temp	1.43月	14/02/17 (月) 14/03/31 (月)	84,85	0%	To be determined (ICRR), Small cryostat

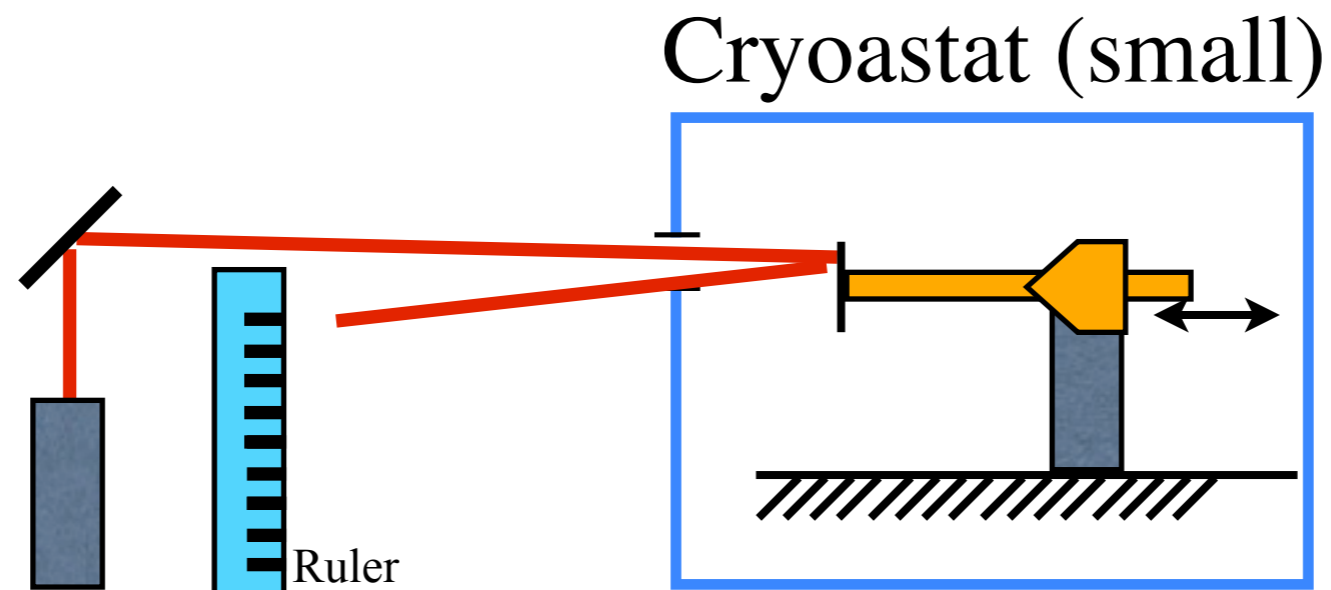
## Status

Candidate list	We made.
Procurement	
Preparation for test	Now in progress
Cryo test	Not yet

# Actuator for initial alignment

Name	Number we have in ICRR	comment
Stepping motor	0	The delivery time is 2.5 month. The counpany said this works at 4K.
Pico motor	1	We will have quick experiment via PT cryocooler.
Autex	0	Actuator with stage. A sales representative will come tomorrow. (15:00-@TV-conference room in the north side of ICRR building. )

# Quick test of the Pico motor at low temperature.



Laser source

S2011 - Adjustable Focus Laser  
Diode Kit, 635 nm, 4.5 mW

Laser source is delivered.

We can start this measurement now.

# Test of Displacement sensor and actuators (OSEM) in cryogenic temperature

87	1.5.2	Displacement sensor and actuators (between Intermediate Mass and Intermediate Recoil Mass) (ICRR)	117日	13/11/04 (月) 14/02/28 (金)		0%	0%	Chen Dan
88	1.5.2.1	Candidate list of light sources and photo diodes	12日	13/11/04 (月) 13/11/15 (金)		0%	0%	Suzuki T, Takahashi R, Yamamoto Kazuhiro, Chen Dan
89	1.5.2.2	Procurement of candidates of light sources and photo diode	26日	13/11/16 (土) 13/12/11 (水)	88	0%	0%	Chen Dan
90	1.5.2.3	Preparation of test for the candidates of light sources and photo diode	12日	13/11/29 (金) 13/12/10 (火)		0%	0%	Chen Dan, Student from AEI Hannover
91	1.5.2.4	Test for the candidates of light sources and photo diode	20日	13/12/12 (木) 13/12/31 (火)	90,89	0%	0%	Chen Dan, Small cryostat
92	1.5.2.5	Preparation for test of sensor	27日	13/11/17 (日) 13/12/13 (金)		0%	0%	Student from AEI Hannover
93	1.5.2.6	Test of sensor at cryogenic temperature	54日	14/01/06 (月) 14/02/28 (金)	92	0%	0%	To be determined (ICRR), Small cryostat

## Status

Candidate list	We made. (are making.)
Procurement	
Preparation	Apparatus for FGA21 are OK.
Cryo test	FGA21 are in progress.

# PD

Name	Type	Peak	Number we have in ICRR	comment
S1223-01	Si PIN PD	960 nm	5	This is used in OSEM at room temperature. The quantum efficiency decreases at low T( $1 \rightarrow 1/5$ ).
G8370-01	InGaAs PIN PD	1550 nm	0	Tomaru-san said this works at low T. I asked a quotation but it was out of stock.
FGA21	InGaAs Pin PD	1600 nm	2	The quantum efficiency decreases at low T( $1 \rightarrow 1/8$ ).

# LED

Name	Type	Peak	Number we have in ICRR	comment
OP232	GaAlAs	890 nm	5	This is used in OSEM at room temperature.
L2656-03	GaAlAs	890 nm	0	Tomaru-san said this works at low T. I will ask a quotation.
ML925B45F	InGaAsP	1550 nm	2(?)	

# Test of Displacement sensor and actuators (OSEM) in cryogenic temperature

- Attocube might know PD for cryogenic temperature.  
Manuela will ask them.
- Several LEDs are delivered. We will test it at 77K.



# A/I on 19th Nov

(a) Dan will ask Takashi whether picomotor can survive at cryogenic temperature.

The Picomotor didn't work at 77K. But that might be because of the cooling shock.  
So we will have quick cooling test.

(b) Dan look for design drawing of stage for Type B and commercial stage.

I received the design drawing from Takanori.

(c) Kazuhiro considers schedule again.

The schedule is in the above slides.

(d) Kazuhiro consult Ryutaro (procurement of OSEM).

Have we ordered?

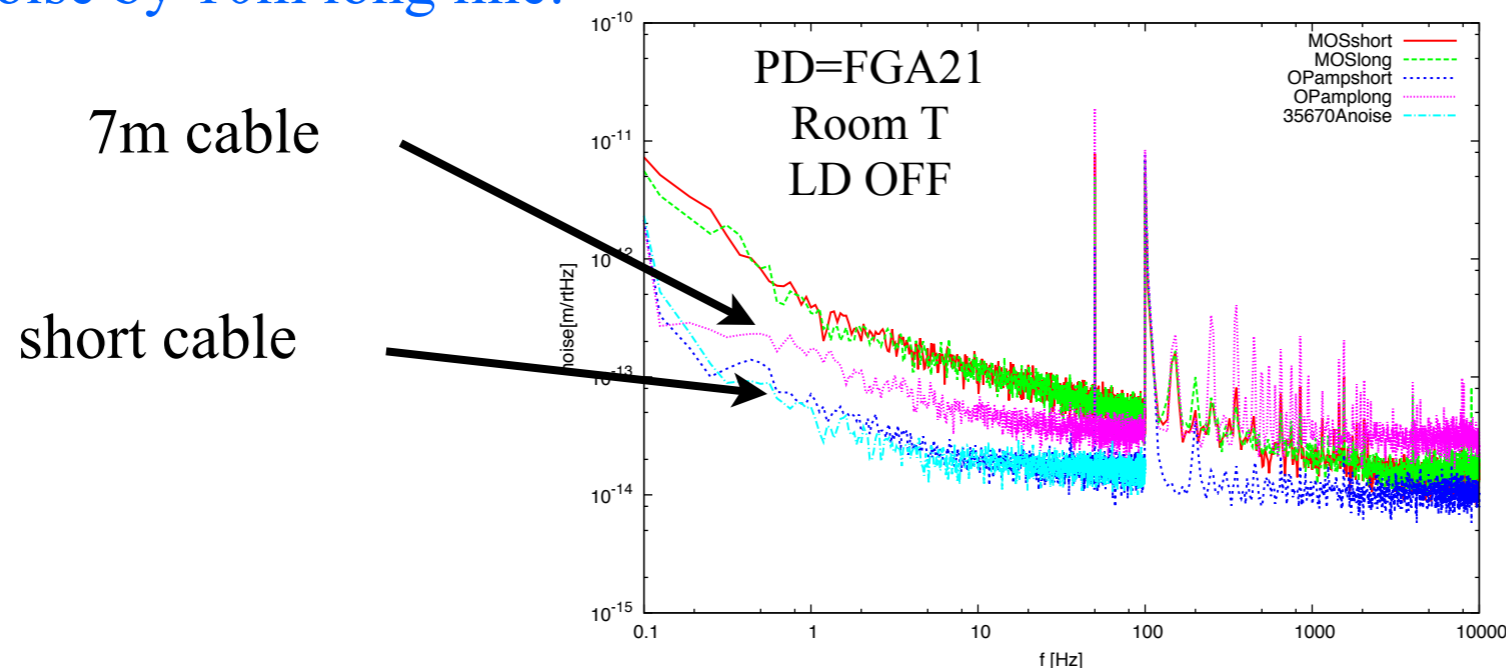
(e) Suzuki-san ? check whether thrust bearing can work at cryogenic temperature.

?

(f) Some concerns; out gas, noise by 10m long line (according to Dan's experiment in Toshiba, it does not matter), must the window of photo diode be removed ?

The gas in the PD(S1223-01) is nitrogen. So we have to remove the window.

Noise by 10m long line:



We have to take care.