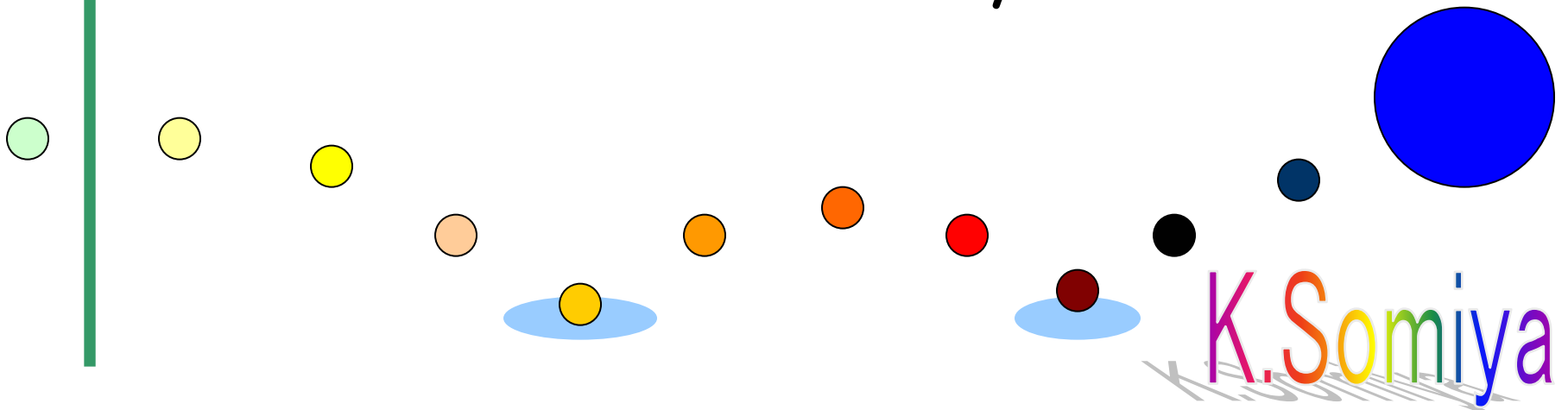


Interface Control Document

LCGT domestic meeting
Dec. 2011

Tokyo Inst of Technology
Kentaro Somiya



Contents

- ICD framework is ready
(<https://granite.phys.s.u-tokyo.ac.jp/svn/LCGT/trunk/ICD/>)
- Please check
 - (i) allocated tasks to your subsystem
 - (ii) interface parameters in charge
- “TBD” parameters should be filled or explained by the coming internal reviews
- Please start using SVN if you haven't
(<http://gwwiki.icrr.u-tokyo.ac.jp/JGWwiki/LCGT/SVN>)

same slide as in Aug

ICD structure (Interface Control Document)

updates

ASC
code

SVN server

SAS
code

Param.List

ICD

members

Ex:

MIF

Latex

```
1 ip.k_GAS4 4.73.E+02 %kg/s^2 %spring constant of 4th GAS filter visl
2 ip.dT_GAS4 #NAME? % %T dependence of spring constant
3 ip.loss_GAS4blade 1.00.E-02 % %loss of GAS filter blades visl
4 ip.m_joint 1.00.E-01 %kg %mass of GAS filter joint for wire
5 ip.usus_GASPF 2.10.E+00 %m %wire length btw 4th GAS filter and P
6 ip.d_GAS4 3.11.E-03 %m %wire diameter (4th GAS) visl
7 ip.d_GAS4 1.00.E+00 % %number of wires (4th GAS) visl
8 ip.E_GAS4 1.86.E+11 %Pa %wire young's modulus (4th GAS) visl
9 ip.tensile_GAS4 2.00.E+09 %Pa %wire tensile strength (4th GAS) visl
10 ip.loss_GAS4wire #NAME? % %loss of wire (4th GAS) visl
11 ip.usus_GAS4 2.10.E+00 %m %wire length btw 4th GAS filter and C
12 ip.dsus_GAS4 3.74.E-03 %m %wire diameter (4th GAS) ~vis,dg
13 ip.num_GAS4wire 1.00.E+00 % %number of wires (4th GAS) ~vis,dg
14 ip.m_payload 1.20.E+02 %kg %total mass suspended by 4th GAS filt
15 ip.radius_BS 1.90.E-01 %m %XBS radius ~mir,mif~
16 ip.thickness_BS 1.20.E-01 %m %XBS thickness ~mir,mif~
17 ip.R_BS 5.00.E-01 % %XBS reflectivity ~mir,mif~
18 ip.loss_BS_HR 5.00.E-05 % %XBS HR surface optical loss ~mir,mi
19 ip.loss_BS_AR 5.00.E-05 % %XBS AR surface reflectivity ~mir,mi
20 ip.RoC_BS 1.00.E+05 % %XBS substrate absorption ~mir,mi
21 ip.abso_BS 1.00.E-08 %1/m %XBS substrate absorption ~mir,mi
22 ip.wedge_BS 3.83.E-01 %deg %XAR wedge of BS ~mir,mif,vac~
23 ip.diameter_cryo8K 5.00.E-01 %m %radiation shield diameter cry,va
24 ip.diameter_aperture 2.50.E-01 %m %radiation shield aperture
25 ip.f1
26 ip.diameter_tophole 1.50.E-01 %m %stop hole diameter (to SAS) ~cry,va
27 ip.heat_fromtop 1.00.E-02 %W %radiation from upper stages ~cry,va
28 ip.heat_fromBS 1.00.E-02 %W %radiation from BS chamber ~cry,va
29 ip.heat_fromArm 1.00.E-02 %W %radiation from arm cavity ~cry,va
30 ip.heat_cryoshield 1.00.E-01 %W %heat from radiation shield cry,va
31 ip.heat_cryoshield #NAME? % %heat from confining light %
```

```
31 Use line-break after each sentence to i
32
33 \section[Overview]{
34
35 This document presents the interface information that should
36 listing LCGT subsystems.
37 The interface information includes (i) definition of each s
38 and (iii) optical layout of the detector.
39 The document is uploaded on the LCGT SVN server (Url:[https
40 trunk/ICD]) and the contents are to be updated on a real-ti
41
42 \section[Allocation of the tasks for LCGT]{
43
44 The scope of each subsystem and the boundaries of subsystem
45 ents must be included in one or more subsystems.
46 The components shared by more than one subsystems, namely [
47 fully controlled to avoid a contradictory assumption of the
48
49 \subsection[List of the subsystems and 3-letter codes]{
50
51 Analog Electronics (AEL)WV:
52 Auxiliary Optics (AOS)WV:
53 Cryogenics (CRY)WV:
54 Digital System (DGS)WV:
55 Facility (FCL)WV:
56 Input and Output Optics (IOO)WV:
57 Laser (LAS)WV:
58
```

VBA



TortoiseSVN
Techfuels.com

SVN = Apache Subversion

filters, real-time OS, control software, monitor software, data storage,
and the related interface parameters are listed in Table 4.

Interface	AEL (CRY)	AOS (CRY)	CRY	DGS	FCL	IOO	LAS
param_AEL	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_AOS	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_CRY	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_DGS	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_FCL	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_IOO	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_LAS	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02

Table 4: Interface parameters that DGS subsystem is in charge of.

3.5 FCL

The components that the FCL subsystem is in charge are as follows:

buildings, car parking, power supply system, clean any rooms, air conditioners, optical fibers, cranes, vacuum access, clean booth on access, acoustic isolation boxes,

and the related interface parameters are listed in Table 5.

Interface	AEL (CRY)	AOS (CRY)	CRY	DGS	FCL	IOO	LAS
param_AEL	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_AOS	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_CRY	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_DGS	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_FCL	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_IOO	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02
param_LAS	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02	2.00.E+02

Table 5: Interface parameters that FCL subsystem is in charge of.

3.6 GIF

The components that the GIF subsystem is in charge are as follows:

thermometers, seismometers, particle meters, microphones, hygrometers, baseline interferometers, barometers, accelerometers,

There are no interface parameters that GIF is in charge of.

3.7 IOO

The components that the IOO subsystem is in charge are as follows:

PMC mirrors, BC mirrors, BC servo, phase-lock system for green, PMC for gr1, PMC for gr2, MC servo, variable attenuator, BS servo, OMC (breathless),

and the related interface parameters are listed in Table 6.

same slide as in Aug

Allocation of tasks

Ex.)

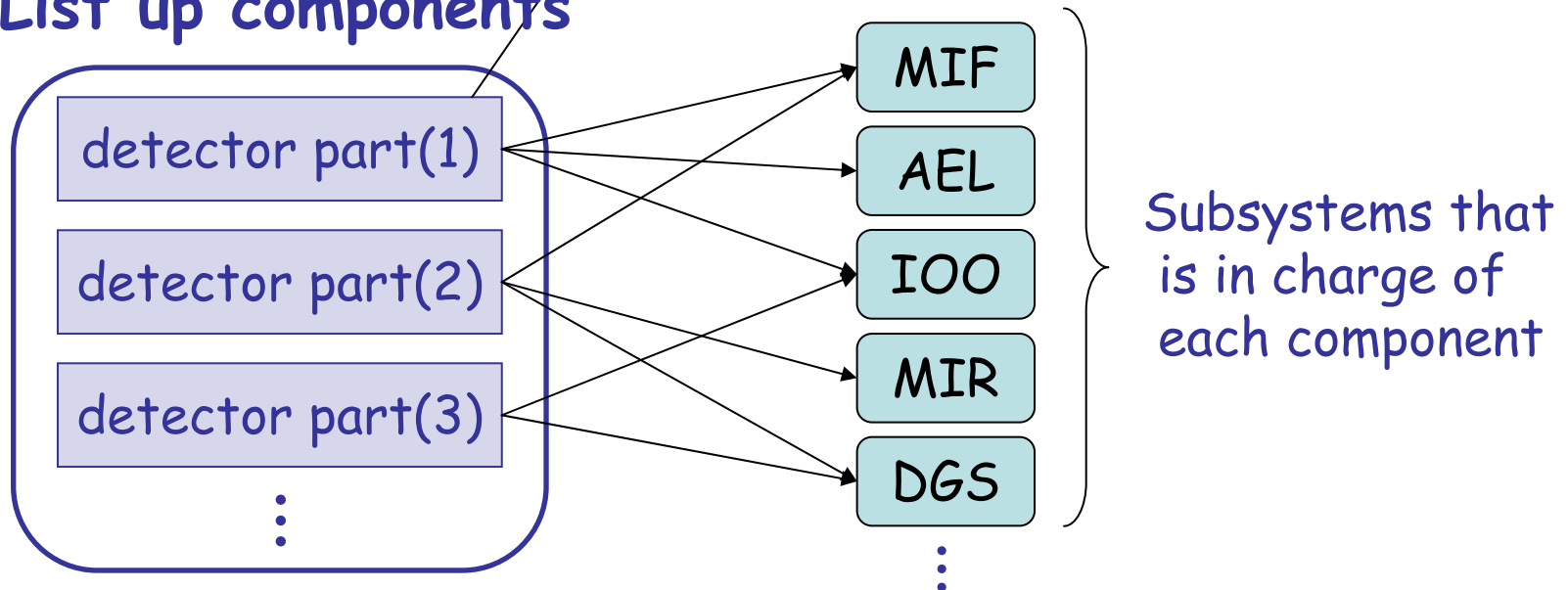
2.6 Main interferometer and core optics

ITM (silica) [MIR],
ETM (sapphire) [MIR],
PR2 [MIR],
SR2 [MIR],
steering mirrors [AOS],
PD for REFL (high/low) [AEL],
PD for POX [AEL],
PD for Y-trans [AEL],
QPDs for AS (high/low) [AEL],
lenses for AS WFS [MIF],
CCDs for trans (X,Y) [MIF],
CARM demodulator [AEL],
MICH demodulator [AEL],
digital system for MIF [DGS],
network analyzer [MIF],
TCS (if necessary) [AOS],

ETM (silica) [MIR],
BS [MIR],
PR3 [MIR],
SR3 [MIR],
pico-motors for steering mirrors [AOS],
PD for POP (high/low) [AEL],
PD for POY [AEL],
QPDs for REFL (high/low) [AEL],
lenses for REFL WFS [MIF],
oplev for core optics [AOS],
CCDs for REFL [MIF],
DARM demodulator (RF) [AEL],
SRCL demodulator [AEL],
in-vacuum mirror cleaning tools [AOS],
optical spectrum analyzer [MIF],

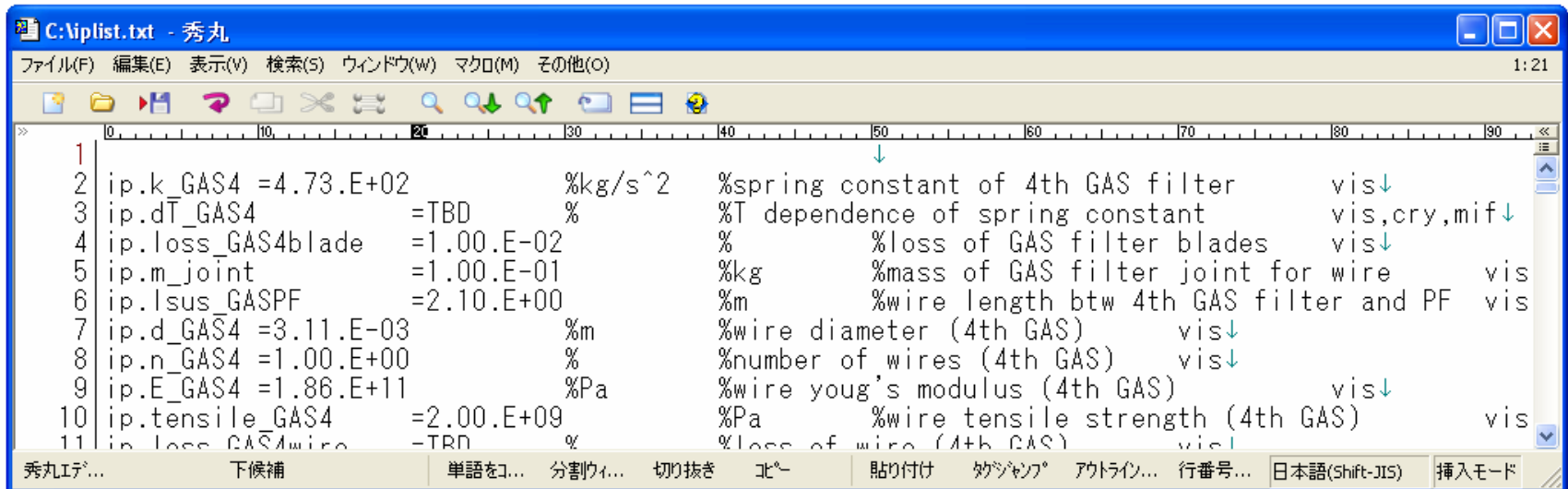
ITM (sapphire) [MIR],
PRM [MIR],
SRM [MIR],
ASp pickoff mirror [MIR],
beam dampers [AOS],
PD for ASp (high/low) [AEL],
PD for X-trans [AEL],
QPDs for POP (high/low) [AEL],
lenses for POP WFS [MIF],
holes on baffles [AOS],
attenuation mirror for REFL [MIF],
PRCL demodulator [AEL],
CARM servo [MIF],
oscilloscopes [MIF],
acoustic isolation boxes [FCL],

List up components



same slide as in Aug

Parameter list



```
C:\Viplist.txt - 秀丸
ファイル(F) 編集(E) 表示(V) 検索(S) ウィンドウ(W) マクロ(M) その他(O) 1:21

>>
1
2 ip.k_GAS4 =4.73.E+02      %kg/s^2    %spring constant of 4th GAS filter      vis↓
3 ip.dT_GAS4      =TBD      %          %T dependence of spring constant      vis,cry,mif↓
4 ip.loss_GAS4blade =1.00.E-02 %          %loss of GAS filter blades      vis↓
5 ip.m_joint      =1.00.E-01 %kg        %mass of GAS filter joint for wire      vis
6 ip.lsus_GASPF    =2.10.E+00 %m         %wire length btw 4th GAS filter and PF  vis
7 ip.d_GAS4 =3.11.E-03      %m         %wire diameter (4th GAS)      vis↓
8 ip.n_GAS4 =1.00.E+00      %          %number of wires (4th GAS)      vis↓
9 ip.E_GAS4 =1.86.E+11      %Pa        %wire young's modulus (4th GAS)      vis↓
10 ip.tensile GAS4 =2.00.E+09 %Pa        %wire tensile strength (4th GAS)      vis
11 ip.loss_GAS4wire =TRD      %          %loss of wire (4th GAS)      vis↓

秀丸エディタ... 下候補 単語をコ... 分割ウィ... 切り抜き コピー 貼り付け 効シヤン? アウトライン... 行番号... 日本語(Shift-JIS) 挿入モード
```

Name (tab) =value (tab) %unit (tab) %description (tab) AAA,BBB,CCC

This part can be directly
used with a Matlab code.

AAA: subsystem in charge
BBB+: related subsystems

- The interface parameters have been discussed with all the subsystem chiefs (parameter meetings)
- Once a parameter is changed, the list will be updated and the chief will be informed via SVN

same slide as in Aug

Parameter list

VBA transforms the list to the table below.
(Visual Basic Application)

Microsoft Excel - iplist2.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

100% MSPゴシック 11 B I U

	A	B	C	D	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	V	W	X
1					TU	PA	VA	VI	MC	OR	IF	DG	EL	IO	LA						
2	drange_PD	#NAME?		PD dynamic range								IF	DG	EL	IO						
3	drange_QPD	#NAME?		QPD dynamic range								IF	DG	EL	IO						
4	aperture_rfpd_hi	3.00.E-03	m	RF PD aperture (high								IF		EL							
5	aperture_rfpd_lo	3.00.E-03	m	RF PD aperture (low								IF		EL							
6	aperture_dcpd_hi	3.00.E-03	m	DC PD aperture (high								IF		EL							
7	aperture_dcpd_lo	3.00.E-03	m	DC PD aperture (low								IF		EL							
8	input_rfpd_high	3.00.E-01	W	RF PD input power (h								IF		EL							
9	input_rfpd_low	1.00.E-01	W	RF PD input power (l								IF		EL							
10	input_dcpd_high	1.00.E-01	W	DC PD input power (h								IF		EL							
11	input_dcpd_low	1.00.E-02	W	DC PD input power (l								IF		EL							
12	RFHOMsuppression	#NAME?		RF HOM suppression a								IF		EL							
13	Dcpowersupply	2.40.E+01	V	DC power supply								IF		EL							
14	dcvoltage	1.00.E-01	V	maximum DC voltage f								IF		EL							
15	noise_PD	1.00.E-09	V/rHz	electric noise on de								IF		EL							
16	error_IQ	1.00.E-02		error of 90deg for I								IF	DG	EL	IO						
17	loss_PD	5.00.E-02		1 - quantum efficien								IF		EL	IO						
18	noise_QPD	1.00.E-09	V/rHz	QPD noise								IF	DG	EL	IO						
19	actuator_IM	#NAME?		actuator power on IM				VI				IF		EL							
20	actuate_range	#NAME?		actuation range (AC)				VI				IF		EL							
21	noise_actuator	#NAME?		actuator noise				VI				IF		EL							
22	actuator_ITM	#NAME?		actuator power on IT				VI				IF		EL							
23	actuator_ETM	#NAME?		actuator power on ET				VI				IF		EL							
24	emissivity_TM	#NAME?		emmissivity of surfac								IF		EL							
25	Tm_TM	2.00.E+01	K	temperature						VI	CR										
26	specificheat_TM	6.90.E-01	J/K/kg	specific heat of TM						VI	CR										
27	kappa_TM	1.57.E+04	W/m/K	thermal conductivit						VI	CR										
28	diameter_cryo8K	5.00.E-01	m	radiation shield dia				VA				CR									
29	emissivity_vacuu	3.00.E-02		duct emissivity				VA				CR									
30	diameter_apertur	2.50.E-01	m	radiation shield ape				VA				CR	IF								
31	heat_fromBS	1.00.E-02	W	radiation from BS ch				VA				CR	IF								
32	heat_fromArm	1.00.E-02	W	radiation from arm c				VA				CR	IF								
33	heat_fromrad	1.00.E-04	W	heat from radiation				VA				CR	IF								

Ready NUM SCRL

Related subsystems are shown in color

Subsystem in charge is shown in bold letters

Sorted by the subsystem in charge

Create tables with each subsystem in charge (used in ICD)

What's new (1)

				TU	FA	VA	VI	MI	CR	IF	DG	EL	IO	LA	AO	GI	DA
rho.ETM	4.00.E+03	kg/m ³	mirror bulk density					MI									
rho.ITM	4.00.E+03	kg/m ³	mirror bulk density					MI									
E.ETM	4.00.E+11	Pa	Young's modulus of E					MI									
E.ITM	4.00.E+11	Pa	Young's modulus of I					MI									
sigma.ETM	2.90.E-01		mirror bulk Poisson					MI									
sigma.ITM	2.90.E-01		mirror bulk Poisson					MI									
alpha.ETM	5E-09	1/K	mirror thermal expan					MI	CR								
alpha.ITM	5E-09	1/K	mirror thermal expan					MI	CR								
Cs.ETM	6.90.E-01	J/K/kg	mirror specific heat					MI	CR								
Cs.ITM	6.90.E-01	J/K/kg	mirror specific heat					MI	CR								
kappa.ETM	1.57.E+04	W/m/K	mirror thermal condu					MI	CR								
kappa.ITM	1.57.E+04	W/m/K	mirror thermal condu					MI	CR								
E.coat.silica	7.20.E+10	Pa	silica coating Young					MI	CR								
E.coat.tantala	1.40.E+11	Pa	tantala coating Youn					MI	CR								
sigma.coat.silic	1.70.E-01		silica coating Poiss					MI	CR								
sigma.coat.tanta	2.30.E-01		tantala coating Pois					MI	CR								
Cv.coat.silica	1.64.E+06	J/K/m ³	silica coating speci					MI	CR								
Cv.coat.tantala	2.10.E+06	J/K/m ³	tantala coating spec					MI	CR								
alpha.coat.silic	5.10.E-07	1/K	silica coating therm					MI	CR								
alpha.coat.tanta	3.60.E-06	1/K	tantala coating ther					MI	CR								
alpha.coat.silic	1.88.E+00	W/m/K	silica coating therm					MI	CR								
alpha.coat.tanta	3.30.E+01	W/m/K	tantala coating ther					MI	CR								
diameter.TM	2.20.E-01	m	TM diameter					MI	CR	IF					AO		
thickness.TM	1.50.E-01	m	TM thickness					MI	CR	IF					AO		
abso.coat	5.00.E-07		coating absorption					MI	CR	IF					AO		
abso.AR	1.00.E-06		AR surface absorptio					MI	CR	IF					AO		
R.BS	5.00.E-01		BS reflectivity					MI		IF							
loss.BS.HR	5.00.E-05		BS HR surface optica					MI		IF							
RoC.BS	5.00.E+05	m	RoC of BS					MI		IF							
abso.BS	1.50.E-04	1/m	BS substrate absorpt					MI		IF							
radisu.BS	1.90.E-01	m	BS radius					MI		IF					AO		
thickness.BS	1.20.E-01	m	BS thickness					MI		IF					AO		
loss.BS.AR	5.00.E-05		BS AR surface refle					MI		IF					AO		
diameter.PRM	2.50.E-01	m	PRM diamter					MI		IF					AO		
thickness.PRM	1.00.E-01	m	PRM thickness					MI		IF					AO		
diameter.PRM	2.50.E-01	m	PRM diamter					MI		IF					AO		

added AOS,GIF,DAS

22cm mirrors

- Some other parameters have been also updated
- All the parameters are written in the MKS system

What's new (2)

				TU	VA	VI	MI	GR	IF	DG	EL	IO	LA	AO	GI	DA
hb	1.05457E-34	J*s	reduced Planck constant						IF			IO	LA	AO		
c	2.99792458E+08	m/s	speed of light						IF			IO	LA	AO		
kb	1.38.E-23	J/K	Boltzmann's constant		VA	VI	MI	GR								
g	9.8.E+00	m/s^2	acceleration of gravity		VA	VI	MI	GR	IF					AO		
lambda	1.064E-06	m	wavelength		VA		MI	GR	IF			IO	LA	AO		
rho_sap	4.0E+03	kg/m^3	density of Sapphire			VI	MI	GR								
Y_sap	4.0E+11	Pa	Young's modulus of Sapphire			VI	MI	GR								
sigma_sap	2.9E-01		Poisson ratio of Sapphire			VI	MI	GR								
alpha_sap	5.6E-09	1/K	thermal expansion of Sapphir				MI	GR								
Cs_sap	6.9E-01	J/kg/K	specific heat of Sapphire				MI	GR								
kappa_sap	1.57E+04	W/m/K	thermal conductivity of Sapp				MI	GR								
n_sap	1.754E+00		refractive index of Sapphire		VA		MI		IF					AO		
tensile sap	TBD	Pa	tensile strength of Sapphire			VI		GR								
rho_sil	2.2E+03	kg/m^3	density of Silica			VI	MI									
Y_sil	7.2E+10	Pa	Young's modulus of Silica			VI	MI		IF							
sigma_sil	1.7E-01		Poisson ratio of Silica				MI									
alpha_sil	5.1E-07	1/K	thermal expansion of Silica				MI									
Cs_sil	1.64E+06	J/m^3/K	specific heat of Silica				MI									
kappa_sil	1.38E+00	W/m/K	thermal conductivity of Sili				MI									
n_sil	1.45E+00		refractive index of Silica		VA		MI		IF					AO		
Y_tan	1.4E+11	Pa	Young's modulus of Tantala			VI	MI		IF							
sigma_tan	2.3E-01		Poisson ratio of Tantala				MI									
alpha_tan	3.6E-06	1/K	thermal expansion of Tantala				MI									
Cs_tan	2.1E+06	J/m^3/K	specific heat of Tantala				MI									
kappa_tan	3.3E+01	W/m/K	thermal conductivity of Tant				MI									
n_tan	2.07E+00		refractive index of Tantala		VA		MI		IF					AO		
rho_Cu	8.93E+03	kg/m^3	density of Copper			VI		GR								
Y_Cu	1.298E+11	Pa	Young's modulus of Copper			VI		GR								
sigma_Cu	3.43E-01		Poisson ratio of Copper			VI		GR								
alpha_Cu	TBD	1/K	thermal expansion of Copper					GR								
Cs_Cu	TBD	J/kg/K	specific heat of Copper at 2					GR								
kappa_Cu	TBD	W/m/K	thermal conductivity of Copp					GR								
RRR_Cu	2.0E+01		RRR of Copper					GR								
tensile Cu	TBD	Pa	tensile strength of Cu fiber			VI		GR								
rho_Al	2.69E+03	kg/m^3	density of Aluminum			VI		GR								
Y_Al	7.03E+11	Pa	Young's modulus of Aluminum			VI		GR								
sigma_Al	3.45E-01		Poisson ratio of Aluminum			VI		GR								
alpha_Al	TBD	1/K	thermal expansion of Aluminu					GR								
Cs_Al	TBD	J/kg/K	specific heat of Aluminum at					GR								
kappa_Al	TBD	W/m/K	thermal conductivity of Alum					GR								
RRR_Al	4.0E+03		RRR of Aluminum					GR								
tensile Al	TBD	Pa	tensile strength of Al fiber			VI		GR								
rho_bol	7.60E+03	kg/m^3	density of Bolfur			VI		GR								
Y_bol	1.568.E+11	Pa	Young's modulus of Bolfur			VI		GR								
sigma_bol	TBD		Poisson ratio of Bolfur			VI		GR								
alpha_bol	TBD	1/K	thermal expansion of Bolfur					GR								
Cs_bol	TBD	J/kg/K	specific heat of Bolfur					GR								
kappa_bol	TBD	W/m/K	thermal conductivity of Bolf					GR								
RRR_bol	TBD		RRR of Bolfur					GR								
tensile bol	3.528.E+09	Pa	tensile strength of 100um Bo			VI		GR								
bigG	6.673E-11	m^3/kg/s^2	Gravitational constant													DA
ms	1.989E+30	kg	solar mass													DA
neutron	1.4E+00	solar ma	neutron star mass													DA
fmax	1.570E+00	Hz	end freq of BNS inspiral													DA
snr	8.0E+00		SNR for IR calculation													DA

- Physical constants have been added.
ex. Planck constant, Young's moduli,
refractive indices, etc.

4 Optical layout

The Optical layout of bLCGT is shown in JGW-D1100685-v1 (dxf file).

5 Schedule

The Schedule of LCGT is shown here: <http://gwlegit.icrr.u-tokyo.ac.jp:13013/PWA> (mpp file; password protected).

6 Glossary

AA : *anti-aliasing*

ADC : *analog-digital converter*

AI : *anti-imaging*

AOM : *acoustic-optic modulator*

AR : *anti-reflective coating*

AS : *anti-symmetric port*

BS : *beamsplitter*

CARM : *common-mode arm length change*

CMR(R) : *common-mode rejection (rate)*

DAC : digital-analog converter

1000

1000

1. Introduction

- Links

ENTRANCE

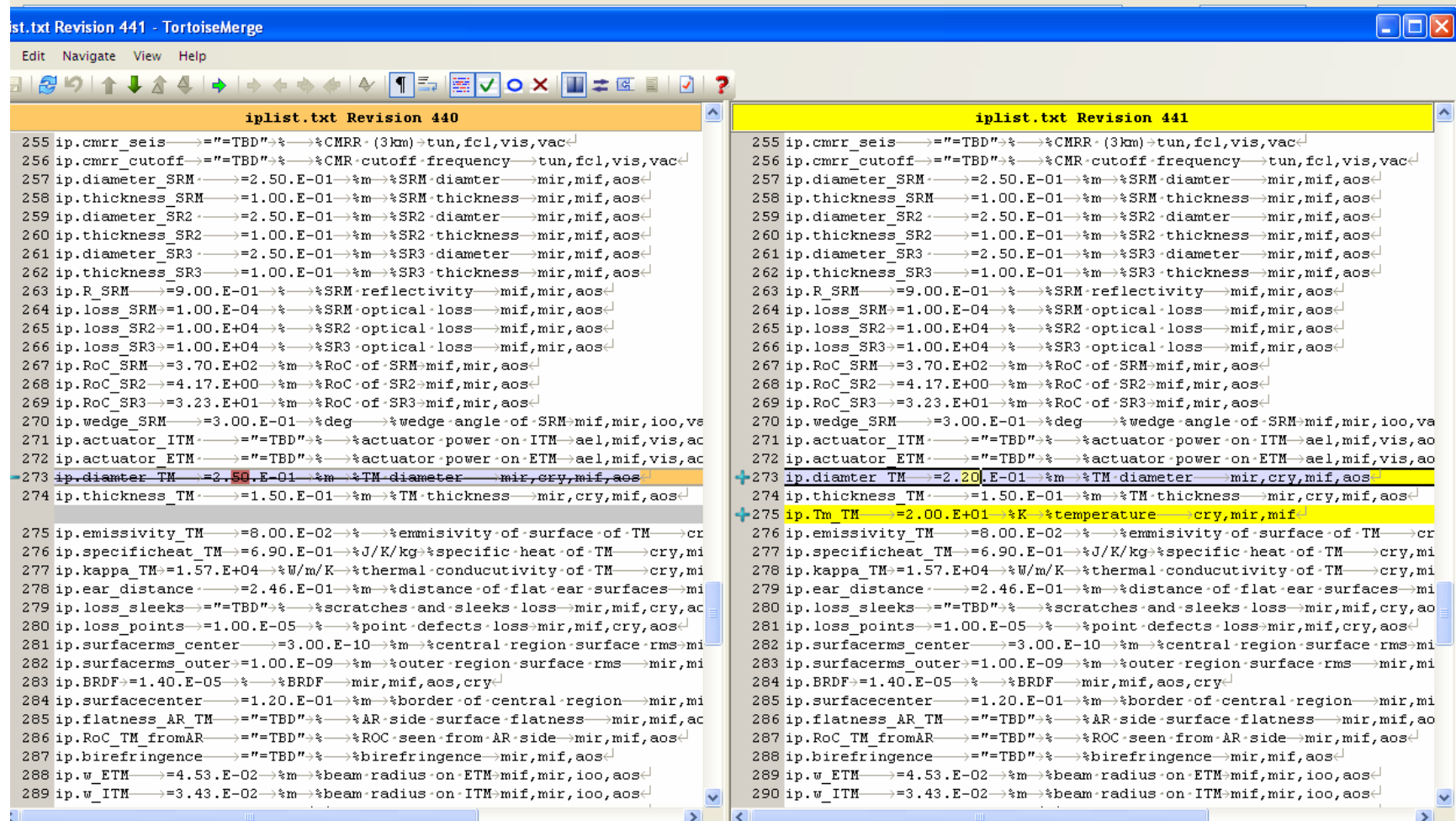
and c

drid c

-

- Links to optical layout and schedule and glossary have been added.

Checking updates in SVN



The screenshot displays the TortoiseMerge application comparing two versions of a file named 'iplist.txt'. The left pane shows 'Revision 440' and the right pane shows 'Revision 441'. The interface includes a menu bar (Edit, Navigate, View, Help) and a toolbar with various icons. The file content is shown in a monospaced font. In the right pane, two lines are highlighted in yellow to indicate updates: line 273, where 'ip.diameter_TM' was changed from 2.50 to 2.20, and line 275, where 'ip.Tm_TM' was added with a value of 2.00. The rest of the file content is identical in both versions.

```
255 ip.cmrr_seis -> "=TBD"% -> %CMRR·(3km) -> tun,fcl,vis,vac<
256 ip.cmrr_cutoff -> "=TBD"% -> %CMR·cutoff·frequency -> tun,fcl,vis,vac<
257 ip.diameter_SRM -> =2.50.E-01 -> %m -> %SRM·diameter -> mir,mif,aos<
258 ip.thickness_SRM -> =1.00.E-01 -> %m -> %SRM·thickness -> mir,mif,aos<
259 ip.diameter_SR2 -> =2.50.E-01 -> %m -> %SR2·diameter -> mir,mif,aos<
260 ip.thickness_SR2 -> =1.00.E-01 -> %m -> %SR2·thickness -> mir,mif,aos<
261 ip.diameter_SR3 -> =2.50.E-01 -> %m -> %SR3·diameter -> mir,mif,aos<
262 ip.thickness_SR3 -> =1.00.E-01 -> %m -> %SR3·thickness -> mir,mif,aos<
263 ip.R_SRM -> =9.00.E-01 -> % -> %SRM·reflectivity -> mif,mir,aos<
264 ip.loss_SRM -> =1.00.E-04 -> % -> %SRM·optical·loss -> mif,mir,aos<
265 ip.loss_SR2 -> =1.00.E+04 -> % -> %SR2·optical·loss -> mif,mir,aos<
266 ip.loss_SR3 -> =1.00.E+04 -> % -> %SR3·optical·loss -> mif,mir,aos<
267 ip.RoC_SRM -> =3.70.E+02 -> %m -> %RoC·of·SRM -> mif,mir,aos<
268 ip.RoC_SR2 -> =4.17.E+00 -> %m -> %RoC·of·SR2 -> mif,mir,aos<
269 ip.RoC_SR3 -> =3.23.E+01 -> %m -> %RoC·of·SR3 -> mif,mir,aos<
270 ip.wedge_SRM -> =3.00.E-01 -> %deg -> %wedge·angle·of·SRM -> mif,mir,ioo,va
271 ip.actuator_ITM -> "=TBD"% -> %actuator·power·on·ITM -> ael,mif,vis,ac
272 ip.actuator_ETM -> "=TBD"% -> %actuator·power·on·ETM -> ael,mif,vis,ac
+273 ip.diameter_TM -> =2.20.E-01 -> %m -> %TM·diameter -> mir,cry,mif,aos<
274 ip.thickness_TM -> =1.50.E-01 -> %m -> %TM·thickness -> mir,cry,mif,aos<
+275 ip.Tm_TM -> =2.00.E+01 -> %K -> %temperature -> cry,mir,mif<
276 ip.emissivity_TM -> =8.00.E-02 -> % -> %emmisivity·of·surface·of·TM -> cr
277 ip.specifichat_TM -> =6.90.E-01 -> %J/K/kg -> %specific·heat·of·TM -> cry,mi
278 ip.kappa_TM -> =1.57.E+04 -> %W/m/K -> %thermal·conductivity·of·TM -> cry,mi
279 ip.ear_distance -> =2.46.E-01 -> %m -> %distance·of·flat·ear·surfaces -> mi
280 ip.loss_sleeks -> "=TBD"% -> %scratches·and·sleeks·loss -> mir,mif,cry,ac
281 ip.loss_points -> =1.00.E-05 -> % -> %point·defects·loss -> mir,mif,cry,aos<
282 ip.surfacerms_center -> =3.00.E-10 -> %m -> %central·region·surface·rms -> mi
283 ip.surfacerms_outer -> =1.00.E-09 -> %m -> %outer·region·surface·rms -> mir,mi
284 ip.BRDF -> =1.40.E-05 -> % -> %BRDF -> mir,mif,aos,cry<
285 ip.surfacecenter -> =1.20.E-01 -> %m -> %border·of·central·region -> mir,mi
286 ip.flatness_AR_TM -> "=TBD"% -> %AR·side·surface·flatness -> mir,mif,ac
287 ip.RoC_TM_fromAR -> "=TBD"% -> %ROC·seen·from·AR·side -> mir,mif,aos<
288 ip.birefringence -> "=TBD"% -> %birefringence -> mir,mif,aos<
289 ip.w_ETM -> =4.53.E-02 -> %m -> %beam·radius·on·ETM -> mif,mir,ioo,aos<
290 ip.w_ITM -> =3.43.E-02 -> %m -> %beam·radius·on·ITM -> mif,mir,ioo,aos<
```

- SVN "Show Log" command shows the updates in yellow
- Changes of the mirror diameter and temperature are shown above
- Email alert could be sent to a mailing list (to be discussed)