24th 14th week(12/26/22 - 12/30/22) schedule for LHD experiment

Weekly report : H.Takahashi

Date	Day of the week	Bt direction	Schedule of the day: Morning (~ 12:15)	Schedule of the day: Afternoon (12:15 ~ 18:45)	Wall	Gas	Experiment implementation system	Remark
12/26	Mo.	CCW	[multi-ion](13:45 ~ 18:45)ECH, NBI, ICH Understanding of the origin and evolution of cosmic organic dust, Advanced scenarios of ICRH plasma start-up, Controls of heat load on divertor tiles in long pulse discharges #1 Opt. CCW Pol. Rax 3.9 Bax 2.5385 gamma 1.2538 Bq 100.0 SC #2 Opt. CCW Pol. Rax 3.6 Bax 2.75 gamma 1.2538 Bq 100.0 SC		Sat: H2 GD Sun: H2 GD Mon: None	H2, He, N2, Ne, Ar	【Responsible person】R.Sakamoto / T.Tokuzawa 【ECH】N.Kenmochi 【NBI】H.Nakano 【central ctrl./data proc.】/ Ohsuna, Ogawa 【radiation】H.Miyake 【EXP LAN】Inoue/Yamamoto 【TGL】N.Tamura/M.Kobayashi 【SubTGL】H.Kasahara/G.Motojima	(multi-ion)CXS, VUV & VIS spectrometers, Manipulator, QMS (id:677) Impurity gas puff (id:680) High Pressure Steady Operation (id:696) ICH: IC wave injection into the vaccum (w/o plasma) (id:705) ECH: off-axis injection (Combined) (id:706) ICH: Antennae insertion for plasma heating by ICH : Subcool required (id:719) Insertion of sample, etc.: Insertion of samples using manipulator
12/27	Tu.	CW	[multi-ion](09:45 ~ 11:30)ECH, NBI, ICH Neutral pressure measurements with robust pressure gauges of the ITER type, The application of divertor pumping to long pulse discharge in hydrogen plasmas #1 Opt. CW Pol. Rax 3.6 Bax 2.75 gamma 1.2538 Bq 100.0 SC [instability](11:30 ~ 12:30)ECH, NBI Precise investigation on termination phase of plasmas with Serpens-mode-like event #1 Opt. CW Pol. Rax 3.6 Bax 2.75 gamma 1.2538 Bq 100.0 SC [turbulence](12:30 ~ 13:30)ECH, NBI Demonstration of real-time ECH plasma control by the data assimilation system ASTI #1 Opt. CW Pol. Rax 3.6 Bax 2.75 gamma 1.2538 Bq 100.0 SC	[multi-ion](13:30 ~ 18:45)ECH, NBI, ICH The application of divertor pumping to long pulse discharge in hydrogen plasmas, Demonstrated controlled plasma operation for long-pulse plasmas duration with ICRF heating and Deuterium retention in damaged tungsten #1 Opt CW Pol. Rax 3.6 Bax 2.75 gamma 1.2538 Bq 100.0 #2 Opt CW Pol. Rax 3.65 Bax 2.7123 gamma 1.2538 Bq 100.0 #3 Opt CW Pol. Rax 3.85 Bax 2.66 gamma 1.2538 Bq 100.0 S ✓ #4 ✓ Opt CW Pol. Rax 3.675 Bax 2.6939 gamma 1.2538 Bq 100.0 #5 ✓ Opt CW Pol. Rax 3.63 Bax 2.751 gamma 1.2538 Bq 100.0 S ✓ #6 ✓ Opt CW Pol. Rax 3.65 Bax 2.756 gamma 1.2538 Bq 100.0 S ✓ #7 ✓ Opt CW Pol. Rax 3.675 Bax 2.775 gamma 1.2538 Bq 100.0 S ✓ #8 ✓ Opt CW Pol. Rax 3.9 Bax 2.6308 gamma 1.2538 Bq 100.0 S ✓	Div Cryo	H2, Ar, He, N2, Ne	【Responsible person】M.Isobe / N.Tamura 【ECH】H.Igami 【NBI】K.Ikeda 【central ctrl./data proc.】Ohsuna, Maeno / Ohsuna, Ogawa 【radiation】M.Kobayashi 【EXP LAN】Inoue/Yamamoto 【TGL】N.Tamura/M.Kobayashi, K.Nagaoka/Y.Takemura, T.Tokuzawa 【SubTGL】H.Kasahara/G.Motojima, R.Seki/N.Kenmochi, A.Shimizu/T.Kobayashi/M.Nishiura/M.Nakata	(instability)CO2, PCI, FTS, CXS (turbulence)realtime-TS, TS(overlap 2-laser) (multi-ion)repeated BL4(0.5s/100s)injection for CXS(BL4, commercial power supply) BL3 gate open(for CXS) Detachment with impurity injection magnetic axis sweeping3.65-3.7m (option: 3.625-3.675m, 3.675-3.725m) CXS, DBS, Qmas, fig, 2I-divertor cryo off, material, IPD(Li, B), (id:677) Impurity gas puff (id:678) Impurity powder dropper (id:679) High Pressure Pulse Operation (id:691) Mag. Conf.: Subcool
12/28	We.							
12/29	Th.							
12/30	Fr.							

LHD project

Daily Schedule

Prepared by
H.Kasahara

Date	Experimental Subject
2022/12/26(Mon)	Understanding of the origin and evolution of cosmic organic dust, Advanced scenarios of ICRH plasma start-up, Controls of heat load on divertor tiles in long pulse discharges

Exp. No.	Topical Group	TGL	Sub-TGL
1328	multi-ion	N.Tamura/M.Kobayashi [2337/2169]	H.Kasahara/G.Motojima [2203/2142]

Time Table

8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
					UP	[multi-ion]						DN		

Details and Experimental Conditions

[multi-ion Coordinator: M.Kobayashi](13:45 ～ 18:45) ECH, NBI, ICH
13:45-14:45 Understanding of the origin and evolution of cosmic organic dust (I. Sakon, M. Kobayashi)
14:45-15:10 Mag. conf. change
15:10-18:10 Advanced scenarios of ICRH plasma start-up (V. Moiseenko, H. Kasahara)
18:10-18:45 Controls of heat load on divertor tiles in long pulse discharges (S. Masuzaki)

Maximum number of discharges : 120
Sequence:3min

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CCW	3.9	2.5385	1.2538	100.0	
2		CCW	3.6	2.75	1.2538	100.0	

Gas

H2,He,N2,Ne,Ar

Wall Conditioning

GD(Before Exp.): None , Cryopump(During Exp.): off

Remarks

(multi-ion)CXS, VUV & VIS spectrometers, Manipulator, QMS

【Precautions for today's LHD experiments】
(id:677) Impurity gas puff
(id:680) High Pressure Steady Operation
(id:696) ICH: IC wave injection into the vaccum (w/o plasma)
(id:705) ECH: off-axis injection (Combined)
(id:706) ICH: Antennae insertion for plasma heating by ICH : Subcool required
(id:719) Insertion of sample, etc.: Insertion of samples using manipulator

LHD project

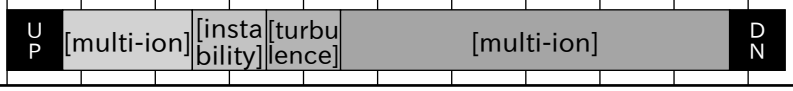
Daily Schedule

Prepared by
N.Tamura H.Kasahara

Date	Experimental Subject
2022/12/27(Tue)	Neutral pressure measurements with robust pressure gauges of the ITER type, The application of divertor pumping to long pulse discharge in hydrogen plasmas Precise investigation on termination phase of plasmas with Serpens-mode-like event Demonstration of real-time ECH plasma control by the data assimilation system ASTI The application of divertor pumping to long pulse discharge in hydrogen plasmas, Demonstrated controlled plasma operation for long-pulse plasmas duration with ICRF heating and Deuterium retention in damaged tungsten

Exp. No.	Topical Group	TGL	Sub-TGL
1329	multi-ion/instability/turbulence	N.Tamura/M.Kobayashi K.Nagaoka/Y.Takemura T.Tokuzawa [2337/2169, 2177/2167, 2217]	H.Kasahara/G.Motojima R.Seki/N.Kenmochi A.Shimizu/T.Kobayashi/M.Nishiura/M.Nakata [2203/2142, 2201/2208, 2454/2231/2184/2276]

Time Table



Details and Experimental Conditions

Gas

[multi-ion Coordinator: H.Kasahara](09:45 ～ 11:30) ECH, NBI, ICH
Neutral pressure measurements with robust pressure gauges of the ITER type(U. Wenzel)
The application of divertor pumping to long pulse discharge in hydrogen plasmas(G. Motojima)
Maximum number of discharges : 50
Sequence:3min, 3min30s

H2,Ar

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CW	3.6	2.75	1.2538	100.0	

[instability Coordinator: NaokiKenmochi](11:30 ～ 12:30) ECH, NBI
11:30-13:30 Precise investigation on termination phase of plasmas with Serpens-mode-like event (Y. Yoshimura)
Maximum number of discharges : 50
Sequence:3min30s

H2,Ar

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CW	3.6	2.75	1.2538	100.0	

[turbulence Coordinator: T.Tokuzawa](12:30 ～ 13:30) ECH, NBI
(piggy back) Demonstration of real-time ECH plasma control by the data assimilation system ASTI (S. Murakami, N. Kenmochi)
Maximum number of discharges : 40
Sequence:3min30s

H2,Ar

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CW	3.6	2.75	1.2538	100.0	

[multi-ion Coordinator: H.Kasahara](13:30 ～ 18:45) ECH, NBI, ICH
The application of divertor pumping to long pulse discharge in hydrogen plasmas(G. Motojima)
Demonstrated controlled plasma operation for long-pulse plasmas duration with ICRF heating and Deuterium retention in damaged tungsten(H.Kasahara, S. Masuzaki)
Maximum number of discharges : 80
Sequence:3min30s, Other

H2,He,N2,Ne,Ar

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CW	3.6	2.75	1.2538	100.0	
2		CW	3.65	2.7123	1.2538	100.0	
3		CW	3.85	2.66	1.2538	100.0	✓
4	✓	CW	3.675	2.6939	1.2538	100.0	
5	✓	CW	3.63	2.751	1.2538	100.0	✓
6	✓	CW	3.65	2.756	1.2538	100.0	✓
7	✓	CW	3.675	2.775	1.2538	100.0	✓
8	✓	CW	3.9	2.6308	1.2538	100.0	✓

Wall Conditioning

GD(Before Exp.): None , GD(After Exp.): None , Cryopump(During Exp.): on

Remarks

(instability)CO2, PCI, FTS, CXS
(turbulence)realtime-TS, TS(overlap 2-laser)

(multi-ion)repeated BL4(0.5s/100s)injection for CXS(BL4, commercial power supply)
BL3 gate open(for CXS)
Detachment with impurity injection
magnetic axis sweeping3.65-3.7m (option: 3.625-3.675m, 3.675-3.725m)
CXS, DBS, Qmas, fig, 2I-divertor cryo off, material, IPD(Li, B),

【Precautions for today's LHD experiments】
(id:677) Impurity gas puff
(id:678) Impurity powder dropper
(id:679) High Pressure Pulse Operation
(id:691) Mag. Conf.: Subcool conditions (Combined) : Subcool required
(id:704) ECH: EC wave injection for more than 10 s (Combined)
(id:706) ICH: Antennae insertion for plasma heating by ICH : Subcool required
(id:714) Mag. Conf.: Rax swing during the discharge
(id:719) Insertion of sample, etc.: Insertion of samples using manipulator
(id:721) Insertion of sample, etc: Exposure of a material sample to divertor plasma by the manipulators
(id:722) Insertion of sample, etc: Insertion of water-cooled tungsten divertor test piece