

24th 3rd week(10/10/22 - 10/14/22) schedule for LHD experiment

Weekly report : H.Takahashi

Date	Day of the week	Bt direction	Schedule of the day												Wall	Gas	Experiment implementation system	Remark												
			Morning (~ 12:15)						Afternoon (12:15 ~ 18:45)																					
10/10	Mo.																													
10/11	Tu.														D2 GD															
10/12	We.	CCW	[turbulence](09:45 ~ 11:00)ECH, NBI, ICH Isotope effect of high Ti plasma # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 2.75 1.2538 100.0						[instability](11:00 ~ 16:30)ECH, NBI, ICH Detachment and Wave Physics # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 2.75 1.2538 100.0 2 CCW 3.9 2.63 1.2538 100.0 3 CCW 3.6 1.375 1.2538 100.0 4 CCW 3.75 1.375 1.2538 100.0 5 CCW 3.75 1.0 1.2538 100.0 6 CCW 3.6 1.0 1.2538 100.0 7 ✓ CCW 3.6 2.85 1.2538 100.0 8 ✓ CCW 3.9 2.5385 1.2538 100.0						[multi-ion](16:30 ~ 18:45)ECH, NBI, ICH Research of ICRF antenna property by the power modulation in LHD # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 1.0 1.2538 100.0 2 CCW 3.6 2.75 1.2538 100.0						None Div Cryo	H2, D2, Ar	[Responsible person]M.Osakabe / M.Kobayashi [ECH]R.Yanai [NBI]Y.Kawamoto [central ctrl./data proc.]Ohsuna, Maeno Ohsuna, Ogawa [radiation]H.Hayashi [EXP LAN]Inoue/Nakamura [TGL]T.Tokuzawa, K.Nagaoka/Y.Takemura, N.Tamura/M.Kobayashi [SubTGL]A.Shimizu/T.Kobayashi/M.Nishitura/M.Nakata, R.Seki/N.Kenmochi, H.Kasahara/G.Motojima	(turbulence)CXS(GV open of NBI#3), PCI high D purity D/(D+H) >0.7 (instability)ECH:1st X-mode inj. 77GHz, 116GHz, 154GHz Off-axis. ECCD, ICH for wall conditioning ECH: 2s-77GHz + mod. 116GHz (id:691) Mag. Conf.: Subcool conditions (Combined) : Subcool required (id:696) ICH: IC wave injection into the vacuum (w/o plasma) (id:699) ECH: Fundamental X-mode injection from the high field side (id:703) ECH: EC wave injection from the Port 1.5Uo antenna (id:705) ECH: off-axis injection (Combined)						
10/13	Th.	CW	[multi-ion](09:45 ~ 11:00)ECH, NBI, ICH Research of ICRF antenna property by the power modulation in LHD # Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.6 1.0 1.2538 100.0						[instability](11:00 ~ 15:30)ECH, NBI, ICH Investigation of edge impurity transport in detached plasma, Mitigation of tungsten induced plasma termination # Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.9 1.0 1.2538 100.0 2 CW 3.9 1.375 1.2538 100.0 3 CW 3.6 2.75 1.2538 100.0						[multi-ion](15:30 ~ 18:45)ECH, NBI, ICH ICRF antenna property by the power modulation in LHD, Lithium powder injection for plasma modification in stellarator geometries # Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.6 2.75 1.2538 100.0						H2 GD Div Cryo	H2, Ar, Ne	[Responsible person]K.Ida / M.Goto [ECH]N.Kenmochi [NBI]K.Ikeda [central ctrl./data proc.]Ohsuna, Maeno / Ohsuna, Ogawa [radiation]T.Saze [EXP LAN]Inoue/Yamamoto [TGL]N.Tamura/M.Kobayashi, K.Nagaoka/Y.Takemura [SubTGL]H.Kasahara/G.Motojima, R.Seki/N.Kenmochi	(instability)FTS, TESPEL(W), CXS, PCI, reflectometry, NB3 gate valve(open) (multi-ion)Li-IPD (id:676) Impurity pellet/TESPEL (id:678) Impurity powder dropper (id:696) ICH: IC wave injection into the vacuum (w/o plasma) (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:722) Insertion of sample, etc.: Insertion of water-cooled tungsten divertor test piece						
10/14	Fr.	CCW	[instability](09:00 ~ 18:45)ECH, NBI Detachment maintenance, prediction, and control; effect of tungsten divertor; anomaly detection in radiative collapse # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.65 2.7123 1.2538 100.0 2 CCW 3.6 2.75 1.2538 100.0 3 CCW 3.9 2.5384 1.2538 100.0																								None	H2, N2, Ne, Ar	[Responsible person]M.Isobe / T.Tokuzawa [ECH]Y.Yoshimura [NBI]K.Tsumori / K.Nagaoka [central ctrl./data proc.]Ohsuna, Maeno / Ohsuna, Ogawa [radiation]T.Kobuchi [EXP LAN]Nakamura/Watanabe [TGL]K.Nagaoka/Y.Takemura [SubTGL]R.Seki/N.Kenmochi	(instability) NBI#3 gate open for CXS measurement LID coil to cancel the natural island RMP 3300A, ECH boost injection for feed back control Diagnostics: CXS, PCI, Fast Thomson(event trg. w/ bolometer), CIII gain control to avoid saturation, Fast Scanning Probe (id:677) Impurity gas puff (id:685) Mag. Conf.: Using LID coil (id:705) ECH: off-axis injection (Combined) (id:720) Probe: Edge plasma measurement using the fast-scanning Langmuir probes (id:722) Insertion of sample, etc:

Wall Conditioning	GD(Before Exp.): D2 , GD(After Exp.): H2 , Cryopump(During Exp.): on
Remarks	(turbulence)CXS(GV open of NBI#3), PCI high D purity $D/(D+H) > 0.7$ (instability)ECH:1st X-mode inj, 77GHz, 116GHz, 154GHz Off-axis. ECCD, ICH for wall conditioning ECH: 2s-77GHz + mod. 116GHz [Precautions for today's LHD experiments] (id:691) Mag. Conf.: Subcool conditions (Combined) : Subcool required (id:696) ICH: IC wave injection into the vacuum (w/o plasma) (id:699) ECH: Fundamental X-mode injection from the high field side (id:703) ECH: EC wave Injection from the Port 1.5Uo antenna (id:705) ECH: off-axis injection (Combined) (id:706) ICH: Antennae insertion for plasma heating by ICH (id:712) NBI: Injection into the discharges with low fields (id:722) Insertion of sample, etc: Insertion of water-cooled tungsten divertor test piece

Daily Schedule

Prepared by

N.Tamura

Date	Experimental Subject																																															
2022/10/13(Thu)	Research of ICRF antenna property by the power modulation in LHD Investigation of edge impurity transport in detached plasma, Mitigation of tungsten induced plasma termination ICRF antenna property by the power modulation in LHD, Lithium powder injection for plasma modification in stellarator geometries																																															
Exp. No.	Topical Group						TGL					Sub-TGL																																				
1284	multi-ion/instability						N.Tamura/M.Kobayashi K.Nagaoka/Y.Takemura [2337/2169, 2177/2167]					H.Kasahara/G.Motojima R.Seki/N.Kenmochi [2203/2142, 2201/2208]																																				
Time Table	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																																	
		U P	[multi- ion]	[instability]				[multi-ion]				D N																																				
Details and Experimental Conditions															Gas																																	
[instability Coordinator: M.Kobayashi](09:45 ~ 11:00) ECH, NBI, ICH 09:45-11:00 Research of ICRF antenna property by the power modulation in LHD (K. Saito) Maximum number of discharges : 40 Sequence:3min <table><tr><td>#</td><td>Option</td><td>Polarity</td><td>Rax(m)</td><td>Bax(T)</td><td>gamma</td><td>Bq(%)</td><td>Subcooled</td></tr><tr><td>1</td><td></td><td>CW</td><td>3.6</td><td>1.0</td><td>1.2538</td><td>100.0</td><td></td></tr></table>															#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled	1		CW	3.6	1.0	1.2538	100.0		H2,Ar																	
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled																																									
1		CW	3.6	1.0	1.2538	100.0																																										
[instability Coordinator: R.Seki](11:00 ~ 15:30) ECH, NBI, ICH 11:00-13:45 Investigation of edge impurity transport in detached plasma (E. Wang, M. Goto) 13:45-15:30 Mitigation of tungsten induced plasma termination (A. Dinklage, N. Tamura) Maximum number of discharges : 100 Sequence:3min <table><tr><td>#</td><td>Option</td><td>Polarity</td><td>Rax(m)</td><td>Bax(T)</td><td>gamma</td><td>Bq(%)</td><td>Subcooled</td></tr><tr><td>1</td><td></td><td>CW</td><td>3.9</td><td>1.0</td><td>1.2538</td><td>100.0</td><td></td></tr><tr><td>2</td><td></td><td>CW</td><td>3.9</td><td>1.375</td><td>1.2538</td><td>100.0</td><td></td></tr><tr><td>3</td><td></td><td>CW</td><td>3.6</td><td>2.75</td><td>1.2538</td><td>100.0</td><td></td></tr></table>															#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled	1		CW	3.9	1.0	1.2538	100.0		2		CW	3.9	1.375	1.2538	100.0		3		CW	3.6	2.75	1.2538	100.0		H2,Ne,Ar	
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled																																									
1		CW	3.9	1.0	1.2538	100.0																																										
2		CW	3.9	1.375	1.2538	100.0																																										
3		CW	3.6	2.75	1.2538	100.0																																										
[multi-ion Coordinator: M.Kobayashi](15:30 ~ 18:45) ECH, NBI, ICH 15:30-16:45 Research of ICRF antenna property by the power modulation in LHD (K. Saito) 16:45-18:45 Lithium powder injection for plasma modification in stellarator geometries (R. Lunsford) Maximum number of discharges : 80 Sequence:3min <table><tr><td>#</td><td>Option</td><td>Polarity</td><td>Rax(m)</td><td>Bax(T)</td><td>gamma</td><td>Bq(%)</td><td>Subcooled</td></tr><tr><td>1</td><td></td><td>CW</td><td>3.6</td><td>2.75</td><td>1.2538</td><td>100.0</td><td></td></tr></table>															#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled	1		CW	3.6	2.75	1.2538	100.0		H2,Ar																	
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled																																									
1		CW	3.6	2.75	1.2538	100.0																																										
Wall Conditioning		GD(Before Exp.): None , GD(After Exp.): H2 , Cryopump(During Exp.): on																																														
Remarks		(instability)FTS,TESPEL(W),CXS,PCI, reflectometry, NB3 gate valve(open) (multi-ion)Li-IPD [Precautions for today's LHD experiments] (id:676) Impurity pellet/TESPEL (id:678) Impurity powder dropper (id:696) ICH: IC wave injection into the vaccum (w/o plasma) (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:722) Insertion of sample, etc: Insertion of water-cooled tungsten divertor test piece																																														

Daily Schedule

Prepared by

N.Tamura

Date	Experimental Subject																
2022/10/14(Fri)	Detachment maintenance, prediction, and control; effect of tungsten divertor; anomaly detection in radiative collapse																
Exp. No.	Topical Group					TGL					Sub-TGL						
1285	instability					K.Nagaoka/Y.Takemura [2177/2167]					R.Seki/N.Kenmochi [2201/2208]						
Time Table	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
		U P	[instability]										D N				
Details and Experimental Conditions														Gas			
[instability Coordinator: N.Kenmochi](09:00 ~ 18:45) ECH, NBI 09:45-12:15 Sustainment of divertor detachment(S. Masuzaki) 09:45-12:15 (piggy-back)Ion temperature measurement in detached plasma with impurity seeding(Y. Hayashi) 09:45-12:15 (piggy-back)Effect of tungsten divertor on impurity seeding detachment(K. Mukai) 12:15-14:10 Anomaly detection of radiation profile in radiative collapse(K. Mukai) 12:15-14:10 (piggy-back)Ion temperature measurement in detached plasma with impurity seeding(Y. Hayashi) 14:10-18:45 Detachment wit RMP(M. Kobayashi) 14:10-18:45 Feedback control of detachment with ECRH and impurity gas injection(M. Kobayashi) 14:10-18:45 Prediction and maintenance of detached plasma by data driven approach(Y. Isobe, R. Sakamoto) (3 shots NBI calibration) Maximum number of discharges : 180 Sequence:3min														H2,N2,Ne,Ar			
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled										
1		CCW	3.65	2.7123	1.2538	100.0											
2		CCW	3.6	2.75	1.2538	100.0											
3		CCW	3.9	2.5384	1.2538	100.0											
Wall Conditioning																	
		GD(Before Exp.): H2 , Cryopump(During Exp.): off															
Remarks		(instability) - NBI#3 gate open for CXS measurement - LID coil to cancel the natural island - RMP 3300A, ECH boost injection for feed back control Diagnostics: CXS, PCI, Fast Thomson(event trg. w/ bolometer), CIII gain control to avoid saturation, Fast Scanning Probe 【Precautions for today's LHD experiments】 (id:677) Impurity gas puff (id:685) Mag. Conf.: Using LID coil (id:705) ECH: off-axis injection (Combined) (id:720) Probe: Edge plasma measurement using the fast-scanning Langmuir probes (id:722) Insertion of sample, etc: Insertion of water-cooled tungsten divertor test piece															