

24th 4th week(10/17/22 - 10/21/22) 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)					
10/17	Mo.									Sat: None Sun: None Mon: None
10/18	Tu.	CCW	[spectroscopy](09:30 ~ 18:45)ECH, NBI Pellet Ablation, Impurity transport # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.9 2.5385 1.2538 100.0 2 CCW 3.6 2.75 1.2538 100.0				None Div Cryo	H2, D2, He, N2, Ne, Ar	[Responsible person]S.Masuzaki / M.Kobayashi [ECH]H.Igami [NBI]K.Ikeda (central ctrl./data proc.)Ohsuna, Yasui / Ohsuna, Ogawa [radiation]M.Tanaka [EXP LAN]Inoue/Nakamura [TGL]M. Goto [SubTGL]M.Yoshinuma/T.Oishi/T.Kawate	(spectroscopy)CXS, Fast Thomson, SOXMOS, BL3 Gate Valve Open (id:676) Impurity pellet/TESPEL (id:677) Impurity gas puff (id:722) Insertion of water-cooled tungsten divertor test piece
10/19	We.	CCW	[instability](09:45 ~ 13:15)ECH, NBI, ICH knock-on tail # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 2.75 1.2538 100.0	[turbulence](13:15 ~ 15:00)ECH, NBI isotope effects on plasma confinement properties and nonlinear interaction of multi-scale turbulence # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 2.75 1.2538 100.0	[multi-ion](15:00 ~ 17:15)ECH, NBI Study of poloidal and toroidal asymmetries during impurity seeding # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.75 2.64 1.2538 100.0	[instability](17:15 ~ 18:45)ECH, NBI Alfvén-Eigenmode # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 0.75 1.2538 100.0 2 ✓ CCW 3.6 1.0 1.2538 100.0 3 ✓ CCW 3.6 0.6 1.2538 100.0 4 ✓ CCW 3.6 2.75 1.2538 100.0 5 ✓ CCW 3.75 2.64 1.2538 100.0 6 ✓ CCW 3.9 2.5385 1.2538 100.0 7 ✓ CCW 3.55 2.7887 1.2538 100.0	None Div Cryo	H2, D2, Ar, He, N2, Ne	[Responsible person]K.Tanaka / M.Kobayashi [ECH]R.Yanai [NBI]Y.Kawamoto (central ctrl./data proc.)Ohsuna, Yasui / Ohsuna, Ogawa [radiation]H.Miyake [EXP LAN]Watanabe/Inoue [TGL]K.Nagaoka/Y.Takemura, T.Tokuzawa, N.Tamura/M.Kobayashi [SubTGL]R.Seki/N.Kemochi, A.Shimizu/T.Kobayashi/M.Nishiura/M.Nakata, H.Kasahara/G.Motojima	(instability) High purity H beam, impurity Pellet CXS(Li profile, Ion temperature), CNPA, DNPA, CNES, open NBI#3 gate (turbulence)GPI, PCI, reflectometer, BES, CXS(Open gate valve of NBI#3), IS, ECE (multi-ion)(BL3 injection) (instability)CXS, FIDA, open NBI#3 gate (id:676) Impurity pellet/TESPEL (id:677) Impurity gas puff (id:685) Mag. Conf.: Using LID coil (id:706) ICH: Antennae insertion for plasma heating by ICH : Subcool required (id:712) NBI: Injection into the discharges with low fields
10/20	Th.	CCW	[turbulence](09:45 ~ 14:00)ECH, NBI Turbulence in e-ITB and MECH # Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.75 1.375 1.2538 100.0 2 CW 3.6 1.375 1.2538 100.0		[spectroscopy](14:00 ~ 18:45)ECH, NBI Spectroscopic studies of highly charged Kr and Xe ions, Recycling study via molecular spectroscopy # Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.6 2.75 1.2538 100.0		None Div Cryo	H2, Ar, He, N2, Ne, Kr, Xe	[Responsible person]R.Sakamoto / N.Tamura [ECH]H.Takahashi [NBI]K.Ikeda (central ctrl./data proc.)Ohsuna, Yasui / Ohsuna, Ogawa [radiation]H.Hayashi [EXP LAN]Watanabe/Nakamura [TGL]T.Tokuzawa, M. Goto [SubTGL]A.Shimizu/T.Kobayashi/M.Nishiura/M.Nakata, M.Yoshinuma/T.Oishi/T.Kawate	(turbulence)CXS (NBI#3 GV open), CTS, HIBP (spectroscopy)impurity pellets (C, Fe, Ti), impurity gas puff (Xe, Kr, Ar, Ne, N2, He) (id:676) Impurity pellet/TESPEL (id:677) Impurity gas puff (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
10/21	Fr.	CCW	[spectroscopy](09:45 ~ 15:15)ECH, NBI Tungsten spectroscopy # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 2.75 1.2538 100.0		[multi-ion](15:15 ~ 18:45)ECH, NBI, ICH Exposure of material, He mixture plasmas # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 2.75 1.2538 100.0		Div Cryo	H2, Ar, He	[Responsible person]M.Osakabe / K.Nagaoka [ECH]Y.Yoshimura [NBI]K.Tsumori / K.Nagaoka (central ctrl./data proc.)Ohsuna, Yasui / Ohsuna, Ogawa [radiation]M.Tanaka [EXP LAN]Inoue/Yamamoto [TGL]M. Goto, N.Tamura/M.Kobayashi [SubTGL]M.Yoshinuma/T.Oishi/T.Kawate, H.Kasahara/G.Motojima	(spectroscopy)NBI#3 gate open (multi-ion)NBI#3 gate open, He beam (id:676) Impurity pellet/TESPEL (id:677) Impurity gas puff (id:685) Mag. Conf.: Using LID coil (id:706) ICH: Antennae insertion for plasma heating by ICH : Subcool required (id:720) Probe: Edge plasma measurement using the fast-scanning Langmuir probes (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

Daily Schedule

Prepared by
M.Yoshinuma

Date	Experimental Subject														
2022/10/18(Tue)	Pellet Ablation, Impurity transport														
Exp. No.	Topical Group				TGL				Sub-TGL						
1286	spectroscopy				M. Goto [2290]				M.Yoshinuma/T.Oishi/T.K awate [2172/2022/2256]						
Time Table	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		U P	[spectroscopy]										D N		

Details and Experimental Conditions	Gas																								
<p>[spectroscopy Coordinator: T.kawate,M.Yoshinuma](09:30 ~ 18:45) ECH, NBI</p> <p>1) Ablation of high Z (neon) and hydrogen cryogenic pellets and its implication to ITER DMS design(A.Matsuyama)</p> <p>2) Analysis of different hydrogen isotopes pellet injection for code validation(N.Panadero)</p> <p>3) Impurity transport study in EC- and NBI-heated plasmas using VUV spectroscopy in experiment with TESPEL injections (T.Fornal)</p> <p>4) Impurity transport study in LHD D/H plasmas using VUV spectroscopy in experiment with TESPEL injection (T.Fornal)</p> <p>5) Impurity transport study in LHD D/H plasmas using VUV spectroscopy in experiment with TESPEL injections (M.Kubkowska)</p> <p>Maximum number of discharges : 180 Sequence:3min</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>#</th> <th>Option</th> <th>Polarity</th> <th>Rax(m)</th> <th>Bax(T)</th> <th>gamma</th> <th>Bq(%)</th> <th>Subcooled</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> <td style="text-align: center;">CCW</td> <td style="text-align: center;">3.9</td> <td style="text-align: center;">2.5385</td> <td style="text-align: center;">1.2538</td> <td style="text-align: center;">100.0</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> <td style="text-align: center;">CCW</td> <td style="text-align: center;">3.6</td> <td style="text-align: center;">2.75</td> <td style="text-align: center;">1.2538</td> <td style="text-align: center;">100.0</td> <td></td> </tr> </tbody> </table>	#	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		<p>H2,D2,He ,N2,Ne,Ar</p>
#	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																			

Wall Conditioning	GD(Before Exp.): None , GD(After Exp.): None , Cryopump(During Exp.): on
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Remarks	<p>(spectroscopy)CXS,Fast Thomson, SOXMOS, BL3 Gate Valve Open</p> <p>【Precautions for today's LHD experiments】</p> <p>(id:676) Impurity pellet/TESPEL</p> <p>(id:677) Impurity gas puff</p> <p>(id:722) Insertion of sample, etc: Insertion of water-cooled tungsten divertor test piece</p>
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Daily Schedule

Prepared by
S.Masuzaki A.Shimizu H.Kasahara N.Tamura

Date	Experimental Subject															
2022/10/19(Wed)	knock-on tail Isotope effects on plasma confinement properties and nonlinear interaction of multi-scale turbulence Study of poloidal and toroidal asymmetries during impurity seeding Alfven-Eigenmode															
Exp. No.	Topical Group				TGL				Sub-TGL							
1287	instability/turbulence /multi-ion				K.Nagaoka/Y.Takemura T.Tokuzawa N.Tamura/M.Kobayashi [2177/2167, 2217, 2337/2169]				R.Seki/N.Kenmochi A.Shimizu/T.Kobayashi/M.Nishiura/M.Nakata H.Kasahara/G.Motojima [2201/2208, 2454/2231/2184/2276, 2203/2142]							
Time Table	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
		U P	[instability]			[turbulenc e]		[multi-ion]		[instabili ty]		D N				

Details and Experimental Conditions	Gas																																																																
[instability Coordinator: Y.Takemura](09:45 ~ 13:15) ECH, NBI, ICH 10:00-13:10 Observation of knock-on tail (KT) formation using DD neutrons and 6LiD γ -rays (H. Matsuura, K. Ogawa) Maximum number of discharges : 90 Sequence:3min <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th><th>Option</th><th>Polarity</th><th>Rax(m)</th><th>Bax(T)</th><th>gamma</th><th>Bq(%)</th><th>Subcooled</th></tr> </thead> <tbody> <tr> <td>1</td><td></td><td>CCW</td><td>3.6</td><td>2.75</td><td>1.2538</td><td>100.0</td><td></td></tr> </tbody> </table>	#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled	1		CCW	3.6	2.75	1.2538	100.0		H2,D2,Ar																																																
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1		CCW	3.6	2.75	1.2538	100.0																																																											
[turbulence Coordinator: AkihiroShimizu](13:15 ~ 15:00) ECH, NBI 13:10-14:40 Isotope effects on plasma confinement properties and nonlinear interaction of multi-scale turbulence (J. Cheng, M. Kobayashi) 14:40-15:00 Magnetic field configuration change Maximum number of discharges : 50 Sequence:3min <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th><th>Option</th><th>Polarity</th><th>Rax(m)</th><th>Bax(T)</th><th>gamma</th><th>Bq(%)</th><th>Subcooled</th></tr> </thead> <tbody> <tr> <td>1</td><td></td><td>CCW</td><td>3.6</td><td>2.75</td><td>1.2538</td><td>100.0</td><td></td></tr> </tbody> </table>	#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled	1		CCW	3.6	2.75	1.2538	100.0		H2,He																																																
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1		CCW	3.6	2.75	1.2538	100.0																																																											
[multi-ion Coordinator: HiroshiKasahara](15:00 ~ 17:15) ECH, NBI 15:00-16:30 Study of poloidal and toroidal asymmetries during impurity seeding (Peterson, Mukai) 16:30-17:10 Magnetic field configuration change Maximum number of discharges : 50 Sequence:3min <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th><th>Option</th><th>Polarity</th><th>Rax(m)</th><th>Bax(T)</th><th>gamma</th><th>Bq(%)</th><th>Subcooled</th></tr> </thead> <tbody> <tr> <td>1</td><td></td><td>CCW</td><td>3.75</td><td>2.64</td><td>1.2538</td><td>100.0</td><td></td></tr> </tbody> </table>	#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled	1		CCW	3.75	2.64	1.2538	100.0		H2,He,N2 ,Ne																																																
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1		CCW	3.75	2.64	1.2538	100.0																																																											
[instability Coordinator: Y.Takemura](17:15 ~ 18:45) ECH, NBI 17:10-18:45 Study of Fast-Ion Stiffness in Alfven-Eigenmode at Helical Device(S. Kamio, K. Nagaoka) piggyback Validation of high-energy NB shine-through model (M. Osakabe, S. Sumida) Maximum number of discharges : 50 Sequence:3min <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th><th>Option</th><th>Polarity</th><th>Rax(m)</th><th>Bax(T)</th><th>gamma</th><th>Bq(%)</th><th>Subcooled</th></tr> </thead> <tbody> <tr> <td>1</td><td></td><td>CCW</td><td>3.6</td><td>0.75</td><td>1.2538</td><td>100.0</td><td></td></tr> <tr> <td>2</td><td>✓</td><td>CCW</td><td>3.6</td><td>1.0</td><td>1.2538</td><td>100.0</td><td></td></tr> <tr> <td>3</td><td>✓</td><td>CCW</td><td>3.6</td><td>0.6</td><td>1.2538</td><td>100.0</td><td></td></tr> <tr> <td>4</td><td>✓</td><td>CCW</td><td>3.6</td><td>2.75</td><td>1.2538</td><td>100.0</td><td></td></tr> <tr> <td>5</td><td>✓</td><td>CCW</td><td>3.75</td><td>2.64</td><td>1.2538</td><td>100.0</td><td></td></tr> <tr> <td>6</td><td>✓</td><td>CCW</td><td>3.9</td><td>2.5385</td><td>1.2538</td><td>100.0</td><td></td></tr> <tr> <td>7</td><td>✓</td><td>CCW</td><td>3.55</td><td>2.7887</td><td>1.2538</td><td>100.0</td><td></td></tr> </tbody> </table>	#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled	1		CCW	3.6	0.75	1.2538	100.0		2	✓	CCW	3.6	1.0	1.2538	100.0		3	✓	CCW	3.6	0.6	1.2538	100.0		4	✓	CCW	3.6	2.75	1.2538	100.0		5	✓	CCW	3.75	2.64	1.2538	100.0		6	✓	CCW	3.9	2.5385	1.2538	100.0		7	✓	CCW	3.55	2.7887	1.2538	100.0		H2,D2
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled																																																										
1		CCW	3.6	0.75	1.2538	100.0																																																											
2	✓	CCW	3.6	1.0	1.2538	100.0																																																											
3	✓	CCW	3.6	0.6	1.2538	100.0																																																											
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6	✓	CCW	3.9	2.5385	1.2538	100.0																																																											
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Wall Conditioning	GD(Before Exp.): None , GD(After Exp.): None , Cryopump(During Exp.): on
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Remarks	<p>(instability) High purity H beam, Impurity Pellet CXS(Li profile, Ion temperature), CNPA,DNPA,CNES, open NBI#3 gate (turbulence)GPI, PCI, reflectometer, BES, CXS(Open gate valve of NBI#3), TS, ECE (multi-ion)(BL3 injection) (instability)CXS, FIDA, open NBI#3 gate</p> <p>【Precautions for today's LHD experiments】 (id:676) Impurity pellet/TESPEL (id:677) Impurity gas puff (id:685) Mag. Conf.: Using LID coil (id:706) ICH: Antennae insertion for plasma heating by ICH : Subcool required (id:712) NBI: Injection into the discharges with low fields (id:722) Insertion of sample, etc: Insertion of water-cooled tungsten divertor test piece</p>
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Daily Schedule

Prepared by

S.Masuzaki
T.Oishi

Date	Experimental Subject																
2022/10/20(Thu)	Turbulence in e-ITB and MECH Spectroscopic studies of highly charged Kr and Xe ions, Recycling study via molecular spectroscopy																
Exp. No.	Topical Group					TGL					Sub-TGL						
1288	turbulence/spectroscopy					T.Tokuzawa M. Goto [2217, 2290]					A.Shimizu/T.Kobayashi/M.Nishiura/M.Nakata M.Yoshinuma/T.Oishi/T.Kawate [2454/2231/2184/2276, 2172/2022/2256]						
Time Table	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
		U P	[turbulence]					[spectroscopy]					D N				
Details and Experimental Conditions														Gas			
[turbulence Coordinator: T.Tokuzawa](09:45 ~ 14:00) ECH, NBI 9:45 - 11:50 Potential and density fluctuation measurement in e-ITB to study isotope effect (A.Shimizu) 11:50 - 14:00 Core and edge turbulence in modulated ECH (M. Nishiura) Maximum number of discharges : 100 Sequence:3min														H2,Ar			
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled										
1		CW	3.75	1.375	1.2538	100.0											
2		CW	3.6	1.375	1.2538	100.0											
[spectroscopy Coordinator: TomokoKawate](14:00 ~ 18:45) ECH, NBI 14:00-14:40 magnetic field change 14:40-17:10 Spectroscopic studies of highly charged Kr and Xe ions through impurity seeding experiment in LHD (S. Gupta, I. Murakami) 17:10-18:45 Recycling of heavy elements on PFC via molecular spectroscopy (T. Kawate) Maximum number of discharges : 95 Sequence:3min														H2,He,N2 ,Ne,Ar,Kr, Xe			
#	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.): None , Cryopump(During Exp.): on																	
Remarks																	
(turbulence)CXS (NBI#3 GV open), CTS, HIBP (spectroscopy)impurity pellets (C, Fe, Ti), impurity gaspuf (Xe, Kr, Ar, Ne, N2, He) 【Precautions for today's LHD experiments】 (id:676) Impurity pellet/TESPEL (id:677) Impurity gas puff (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																	

Daily Schedule

Prepared by

S.Masuzaki
G.Motojima

Date	Experimental Subject														
2022/10/21(Fri)	Tungsten spectroscopy Exposure of material, He mixture plasmas														
Exp. No.	Topical Group					TGL					Sub-TGL				
1289	spectroscopy/multi-ion					M. Goto N.Tamura/M.Kobayashi [2290, 2337/2169]					M.Yoshinuma/T.Oishi/T.Kawate H.Kasahara/G.Motojima [2172/2022/2256, 2203/2142]				
Time Table	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		U P	[spectroscopy]					[multi-ion]					D N		
Details and Experimental Conditions														Gas	
[spectroscopy Coordinator: TetsutaroOishi](09:45 ~ 15:15) ECH, NBI 9:45-11:30 Simultaneous multi-wavelength spectroscopies for validation on atomic data and spectroscopic modelings for highly charged ions (I. Murakami) 11:30-13:00 Looking for interesting level populations in charge states of Tungsten around W36+ and possible uses in spectrometer relative intensity calibration (R. Hutton) 13:00-15:00 Expansion of the observable charge state range of tungsten ions (T. Oishi) 15:00-15:10 NBI calibration 3 shots Maximum number of discharges : 110 Sequence:3min														H2,Ar	
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled								
1		CCW	3.6	2.75	1.2538	100.0									
[multi-ion Coordinator: GenMotojima](15:15 ~ 18:45) ECH, NBI, ICH 15:10-15:55 Exposure of material samples into the LHD edge plasma by means of the manipulator (C.P.Dhard(IPP), S. Masuzaki) 15:55-17:45 Investigation of He density profile in mixture plasmas (I.C. Chan, H.Yamada(U. Tokyo)) Characteristics of He plasma heated by ECH or by ECH + He-NBI (N. Tamura) 17:45-18:45 Helium removal in helium beam experiments (G. Motojima) Maximum number of discharges : 80 Sequence:3min														H2,He,Ar	
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled								
1		CCW	3.6	2.75	1.2538	100.0									
Wall Conditioning	GD(Before Exp.): None , Cryopump(During Exp.): on														
Remarks	(spectroscopy)NBI#3 gate open (multi-ion)NBI#3 gate open, He beam 【Precautions for today's LHD experiments】 (id:676) Impurity pellet/TESPEL (id:677) Impurity gas puff (id:685) Mag. Conf.: Using LID coil (id:706) ICH: Antennae insertion for plasma heating by ICH : Subcool required (id:720) Probe: Edge plasma measurement using the fast-scanning Langmuir probes (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														