

23rd 3rd week(10/25/21 - 10/29/21) schedule for LHD experiment

Weekly report : H.Takahashi

Date	Day of the week	Bt direction	Wall condition (mor)	Schedule of the day												Wall conditioning (night)	Gas	Experiment implementation system	Remark
				Morning (~ 12:15)						Afternoon (12:15 ~ 18:45)									
10/25	Mo.																		
10/26	Tu.	CW		[turbulence](10:00 ~ 12:00)ECH, NBI, ICH transition to high Ti plasma # Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.55 2.78 1.2538 100.0						[multi-ion](12:00 ~ 18:45)ECH, NBI, ICH Wall recycling control, Multi-ion transport # Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.6 2.75 1.2538 100.0						None	H2, D2, He, Ar	[Responsible person] K.Ida / N.Tamura [ECH] Yoshimura [NBI] Ikeda [central ctrl./data proc.] Maeno/Ogawa, Yasui [radiation] Miyake [EXP LAN] Inoue/Nakamura [TGL] T.Tokuzawa, N.Tamura/M.Kobayashi [SubTGL] T.Kobayashi/T.Tsujimura/M.Nakata, H.Kasahara/G.Motojima	(turbulence)D-SSGP, D Pellet (multi-ion)Impurity Pellet(C, Fe, Mo), D-SSGP, D Pellet (id:612) Impurity pellet/TESPEL (id:614) Impurity powder dropper (id:617) Mag. Conf.: Rax = 3.55 - 3.599 m (id:655) ECH: Power injection for more than 10 s (id:657) ICH: Antennae insertion for plasma heating by ICH
10/27	We.	CCW		[spectroscopy](09:45 ~ 18:45)ECH, NBI Zeff Evaluation, Detachment, Pellet ablation # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 2.75 1.2538 100.0												Div Cryo	H2, D2, He, N2, Ne, Ar	[Responsible person] M.Osakabe / M.Kobayashi [ECH] Tsujimura [NBI] Kamio [central ctrl./data proc.] Maeno/Ogawa, Yasui [radiation] Tanaka [EXP LAN] Watanabe/Inoue [TGL] M. Goto [SubTGL] M.Yoshinuma/T.Oishi/T.Kawate	(spectroscopy)PCI, CXS, Ne-Pellet,Divertor cryo 2I off (id:612) Impurity pellet/TESPEL (id:613) impurity gas puff (id:654) ECH: Injection from the antenna at Port 1.5Uo
10/28	Th.	CCW		[turbulence](09:00 ~ 18:45)ECH, NBI, ICH Impurity accumulation, Turbulence spreading, Zonal flow # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.55 2.63 1.2538 0.0 2 CCW 3.7 2.63 1.2538 150.0 3 CCW 3.6 2.75 1.2538 100.0 4 CCW 3.9 2.5384 1.2538 100.0 5 ✓ CCW 3.6 2.63 1.2538 100.0 6 ✓ CCW 3.85 2.6649 1.2538 100.0 7 ✓ CCW 3.9 2.6307 1.2538 100.0												Div Cryo	H2, D2, He, N2, Ne, Ar	[Responsible person] R.Sakamoto / T.Tokuzawa [ECH] Kenmochi [NBI] Nakano [central ctrl./data proc.] Maeno/Ogawa, Yasui [radiation] Kobayashi [EXP LAN] Nakamura/Yamamoto [TGL] T.Tokuzawa [SubTGL] T.Kobayashi/T.Tsujimura/M.Nakata	(turbulence)Short-time GD (Before Exp.) Div Cryo ON except for 2-I section Adjust timing of TS measurement TESPEL, BES, CXS, RMP, SSGP, GPI, PCI, reflectometer, fast TS diverter leg deviation normal ECH power Bq=0% => polarity change for IS coil current is required. (id:612) Impurity pellet/TESPEL (id:626) Mag. Conf.: Using LID coil (id:635) subcool magnetic field : Subcool required (id:652) Mag. Conf.: Bq = 0%, 150%
10/29	Fr.	CCW		[turbulence](09:00 ~ 18:45)ECH, NBI, ICH Ion turbulent transport and Ti clamping study, Turbulence response in ITB formation, Turbulence pulse properties in e-ITB # Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.5 2.8285 1.2538 100.0 2 CCW 3.6 2.75 1.2538 100.0 3 CCW 3.85 2.6649 1.2538 100.0 4 ✓ CCW 3.5 2.9314 1.2538 100.0 5 ✓ CCW 3.53 2.8045 1.2538 100.0 6 ✓ CCW 3.53 2.9065 1.2538 100.0 7 ✓ CCW 3.55 2.7887 1.2538 100.0 8 ✓ CCW 3.55 2.8901 1.2538 100.0						# Opt. Pol. Rax Bax gamma Bq SC 9 ✓ CCW 3.6 2.85 1.2538 100.0 10 ✓ CCW 3.75 2.64 1.2538 100.0 11 ✓ CCW 3.75 2.736 1.2538 100.0 12 ✓ CCW 3.85 2.5714 1.2538 100.0						Div Cryo	D2, Ar	[Responsible person] M.Isobe / M. Goto [ECH] Yanai [NBI] Nuga [central ctrl./data proc.] Maeno/Ogawa, Yasui [radiation] Hayashi [EXP LAN] Inoue/Watanabe [TGL] T.Tokuzawa [SubTGL] T.Kobayashi/T.Tsujimura/M.Nakata	(turbulence)PCI, BS, fast TS, MSE, Div cryopump (except for 2-I section) (id:617) Mag. Conf.: Rax = 3.55 - 3.599 m (id:635) subcool magnetic field : Subcool required (id:645) ECH perpendicular injection from 2-O : Subcool required (id:666) Mag. Conf.: Rax = 3.5, 3.53 m

Daily Schedule

Prepared by

T.Tokuzawa
G.Motojima

Date	Experimental Subject																														
2021/10/26(Tue)	transition to high Ti plasma Wall recycling control, Multi-ion transport																														
Exp. No.	Topical Group					TGL					Sub-TGL																				
1222	turbulence/multi-ion					T.Tokuzawa N.Tamura/M.Kobayashi [2217, 2337/2169]					T.Kobayashi/T.Tsujimura/M.Nakata H.Kasahara/G.Motojima [2231/2023/2276, 2065/2142]																				
Time Table	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																
		U P	[turbulence]									D N																			
Details and Experimental Conditions														Gas																	
[turbulence](10:00 ~ 12:00)ECH, NBI, ICH Plasma behaviors at the boundary of the transition to the high ion temperature discharge will be investigated (Yoshinuma) Maximum number of discharges : 50 Sequence:3min, 3min30s														H2,D2,He																	
<table border="1"> <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>CW</td><td>3.55</td><td>2.78</td><td>1.2538</td><td>100.0</td><td></td></tr> </tbody> </table>														#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled	1		CW	3.55	2.78	1.2538	100.0		H2,D2,He	
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled																								
1		CW	3.55	2.78	1.2538	100.0																									
[multi-ion](12:00 ~ 18:45)ECH, NBI, ICH Particle species dependence of impurity hole phenomenon will be investigated (Satake). Wall recycling control using low Z powder dropping and the change of their spatial distributions will be investigated (Ashikawa). Mixture-induced phase transitions in multi-ion transport will be investigated (A. Dinklage) Maximum number of discharges : 120 Sequence:3min, 3min30s														H2,D2,He,Ar																	
<table border="1"> <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>CW</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		CW	3.6	2.75	1.2538	100.0		H2,D2,He,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.): No , Cryopump(During Exp.): No																															
Remarks		(turbulence)D-SSGP, D Pellet (multi-ion)Impurity Pellet(C, Fe, Mo), D-SSGP, D Pellet 【Precautions for today's LHD experiments】 (id:612) Impurity pellet/TESPEL (id:614) Impurity powder dropper (id:617) Mag. Conf.: Rax = 3.55 - 3.599 m (id:655) ECH: Power injection for more than 10 s (id:657) ICH: Antennae insertion for plasma heating by ICH																													

Daily Schedule

Prepared by

M.Yoshinuma

Date	Experimental Subject																														
2021/10/27(Wed)	Zeff Evaluation, Detachment, Pellet ablation																														
Exp. No.	Topical Group					TGL					Sub-TGL																				
1223	spectroscopy					M. Goto [2290]					M.Yoshinuma/T.Oishi/T.K awate [2172/2022/]																				
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																	
[spectroscopy](09:45 ~ 18:45)ECH, NBI 1) Evaluation Zeff in LHD (Kawamoto) 2) Sustainment of divertor detachment by using feedback controlled impurity seeding (Masuzaki) 3) Establishing atomic database of L-shell transitions of the Fe-peak elements with LHD (Yamaguchi, Kawate) 4) Diagnostics of relativistic electrons by Thomson scattering in high electron temperature plasmas (Funaba) 5) Ablation of high Z (neon) and hydrogen cryogenic pellets and its implication to ITER DMS design (Matsuyama, Sakamoto) Maximum number of discharges : 180 Sequence:3min <table border="1"> <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,He ,N2,Ne,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.): No , Cryopump(During Exp.): Yes																													
Remarks		(spectroscopy)PCI, CXS, Ne-Pellet,Divertor cryo 2I off 【Precautions for today's LHD experiments】 (id:612) Impurity pellet/TESPEL (id:613) impurity gas puff (id:654) ECH: Injection from the antenna at Port 1.5Uo																													

Daily Schedule

Prepared by

K.Nagaoka

Date	Experimental Subject															
2021/10/28(Thu)	Impurity accumulation, Turbulence spreading, Zonal flow															
Exp. No.	Topical Group					TGL					Sub-TGL					
1224	turbulence					T.Tokuzawa [2217]					T.Kobayashi/T.Tsujimura/ M.Nakata [2231/2023/2276]					
Time Table	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
		U P	[turbulence]										D N			
Details and Experimental Conditions														Gas		
[turbulence](09:00 ~ 18:45)ECH, NBI, ICH Robustness assessment of methods to prevent an impurity accumulation Effects of hydrogen isotope, edge magnetic field structure and impurity on turbulence spreading Verification of the effect of magnetic field geometry on zonal flow in 3D confined configuration Maximum number of discharges : 170 Sequence:3min														H2,D2,He ,N2,Ne,Ar		
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled									
1		CCW	3.55	2.63	1.2538	0.0										
2		CCW	3.7	2.63	1.2538	150.0										
3		CCW	3.6	2.75	1.2538	100.0										
4		CCW	3.9	2.5384	1.2538	100.0										
5	✓	CCW	3.6	2.63	1.2538	100.0										
6	✓	CCW	3.85	2.6649	1.2538	100.0	✓									
7	✓	CCW	3.9	2.6307	1.2538	100.0	✓									
Wall Conditioning																
GD(Before Exp.): D2 , Cryopump(During Exp.): Yes																
Remarks																
(turbulence)Short-time GD (Before Exp.) Div Cryo ON except for 2-I section Adjust timing of TS measurement TESPEL, BES, CXS, RMP, SSGP, GPI, PCI, reflectometer, fast TS diverter leg deviation normal ECH power Bq=0% => polarity change for IS coil current is required. 【Precautions for today's LHD experiments】 (id:612) Impurity pellet/TESPEL (id:626) Mag. Conf.: I_LID(RMP)=1920-3400A (id:635) subcool magnetic field : Subcool required (id:652) Mag. Conf.: Bq = 0%, 150%																

Daily Schedule

Prepared by

T.Kobayashi

Date	Experimental Subject															
2021/10/29(Fri)	Ion turbulent transport and Ti clamping study, Turbulence response in ITB formation, Turbulence pulse properties in e-ITB															
Exp. No.	Topical Group					TGL					Sub-TGL					
1224	turbulence					T.Tokuzawa [2217]					T.Kobayashi/T.Tsujimura/ M.Nakata [2231/2023/2276]					
Time Table	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
		U P	[turbulence]										D N			
Details and Experimental Conditions														Gas		
[turbulence](09:00 ~ 18:45)ECH, NBI, ICH Ion turbulent transport and Ti clamping study, Turbulence response in ITB formation, Turbulence pulse properties in e-ITB Maximum number of discharges : 170 Sequence:3min														D2,Ar		
#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled									
1		CCW	3.5	2.8285	1.2538	100.0										
2		CCW	3.6	2.75	1.2538	100.0										
3		CCW	3.85	2.6649	1.2538	100.0	✓									
4	✓	CCW	3.5	2.9314	1.2538	100.0	✓									
5	✓	CCW	3.53	2.8045	1.2538	100.0										
6	✓	CCW	3.53	2.9065	1.2538	100.0	✓									
7	✓	CCW	3.55	2.7887	1.2538	100.0										
8	✓	CCW	3.55	2.8901	1.2538	100.0	✓									
9	✓	CCW	3.6	2.85	1.2538	100.0	✓									
10	✓	CCW	3.75	2.64	1.2538	100.0										
11	✓	CCW	3.75	2.736	1.2538	100.0	✓									
12	✓	CCW	3.85	2.5714	1.2538	100.0										
Wall Conditioning																
GD(Before Exp.): No , Cryopump(During Exp.): Yes																
Remarks		(turbulence)PCI, BS, fast TS, MSE, Div cryopump (except for 2-I section) 【Precautions for today's LHD experiments】 (id:617) Mag. Conf.: Rax = 3.55 - 3.599 m (id:635) subcool magnetic field : Subcool required (id:645) ECH perpendicular injection from 2-O : Subcool required (id:666) Mag. Conf.: Rax = 3.5, 3.53 m														