25th 6th week(04/15/24 - 04/19/24) schedule for LHD experiment

Weekly report :

Date	Day of the week	Bt direction	Schedule of the day: Morning (～ 12:15)	Schedule of the day: Afternoon (12:15 ～ 16:45)	Wall	Gas	Experiment implementation system	Remark
4/15	Mo.				Sat: He GD Sun: He GD Mon: None			
4/16	Tu.	CW	[IA](10:30 ～ 12:30)ECH, NBI, ICH Investigation of instability driven by ICRF fast ion \# Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.6 2.5 1.2538 100.0	[MAP](12:30 ～ 13:30)ECH, NBI, ICH Exposure of material samples into the LHD edge plasma by means of the manipulator \# Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.6 2.75 1.2538 100.0 [IA](13:30 ～ 16:45)ECH, NBI, ICH measurement of fast ion distribution using the newly installed Imaging Neutral Particle Analyzer \# Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.55 2.7887 1.2538 100.0 2 CW 3.6 1.25 1.2538 100.0 3 ✓ CW 3.9 2.5385 1.2538 100.0	None	H2, He, Ar	【Responsible person】K.Tanaka / H.Hayashi 【Coordinator#1】R.Seki/M.Shoji 【Coordinator#2】M.Goto/K.Mukai 【ECH】H.Igami 【Gas・vacuum・shutter】A/B 【Low temp.】ohba.kouki 【LID power】M.Kawai/K.Nagahara 【Coil power】tanoue.hiroyuki 【central ctrl.】nonomura.miki 【data proc.】M.Ohsuna 【EXP LAN】nakamura.osamu	(IA)DNPA, HIBP, CXS (MAP)Sample manipulator (Port 10.5L) (id:728) Mag. Conf.: 3.55 m =< Rax < 3.6 m (id:747) ECH: EC wave injection for more than 10 s (Combined) (id:749) ICH: Antennae insertion for plasma heating by ICH : Subcool required (id:760) Insertion of sample, etc: Exposure of a material sample to divertor plasma by the manipulators
4/17	We.	CCW	[IA](10:30 ～ 16:45)ECH, NBI, ICH Observation of gamma-ray emission from Li-H reaction for fast ion diagnostics/Understanding the dependence of fast ion distribution on various magnetic field configurations using the newly installed Imaging Neutral Particle Analyzer (INPA) \# Opt. Pol. Rax Bax gamma Bq SC 1 CCW 3.6 2.75 1.2538 100.0 2 CCW 3.75 2.64 1.2538 100.0		H2 GD	H2, He	【Responsible person】S.Sakakibara / H.Hayashi 【Coordinator#1】K.Ogawa 【Coordinator#2】T.Kawate 【ECH】H.Takahashi 【Gas・vacuum・shutter】C/A 【Low temp.】ohba.kouki 【LID power】M.Kawai/K.Nagahara 【Coil power】takami.shigeyuki 【central ctrl.】nonomura.miki 【data proc.】M.Ohsuna 【EXP LAN】inoue.tomoyuki	(IA)Impurity Pellet(LiF), CXS(Li profile, Ion temperature profile), DNPA (id:723) Impurity pellet/TESPEL (id:749) ICH: Antennae insertion for plasma heating by ICH : Subcool required
4/18	Th.	CW	[IA](10:30 ～ 12:15)ECH, NBI Collisionality dependence of shielding threshold of external RMP \# Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.6 0.9 1.129 100.0 2 CW 3.6 0.75 1.129 100.0 3 ✓ CW 3.6 0.5 1.129 100.0	[MAP](12:15 ～ 16:45)ECH, NBI Calibration of Solar EUV Spectrometers, Transport analysis of heavy impurity ions, Impact of turbulence reduction via boron injection \# Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.9 1.0 1.2538 100.0 2 CW 3.75 2.64 1.2538 100.0 3 CW 3.6 2.75 1.2538 100.0	He GD Div Cryo	H2, He, Ar	【Responsible person】N.Tamura / H.Hayashi 【Coordinator#1】C.Suzuki/Y.Takemura 【Coordinator#2】M.Kobayashi/N.Kenmochi 【ECH】N.Kenmochi 【Gas・vacuum・shutter】B/C 【Low temp.】ohba.kouki 【LID power】M.Kawai/K.Nagahara 【Coil power】tanoue.hiroyuki 【central ctrl.】nonomura.miki 【data proc.】M.Ohsuna 【EXP LAN】nakamura.osamu	(IA)CXS, FTS, LID(10:30-12:15) (MAP)TESPEL, CXS, HIBP, impurity pellet(W), Spectrometers, PCI, CECE (id:723) Impurity pellet/TESPEL (id:724) Impurity gas puff (id:731) Mag. Conf.: Using LID coil (id:738) Mag. Conf.: Exp. with low gamma (Combined) (id:752) NBI: Injection into the discharges with low fields (id:762) Impurity powder dropper
4/19	Fr.	CW	[IA](10:30 ～ 14:45)ECH, NBI, ICH Interplay of fast ions and impurities, Impurity exhaust by 3-ion heating \# Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.6 2.75 1.2538 100.0 2 CW 3.6 2.68 1.2538 100.0	[TC](14:45 ～ 16:45)ECH, NBI, ICH electron-scale turbulence characteristics and its influence to transport, turbulence driven transport between LHD and W7-X \# Opt. Pol. Rax Bax gamma Bq SC 1 CW 3.6 2.75 1.2538 100.0	None	H2, He, Ne, Ar	【Responsible person】S.Masuzaki / H.Hayashi 【Coordinator#1】T.Kobayashi/T.Kawate 【Coordinator#2】M.Nishiura/K.Ogawa 【ECH】R.Yanai 【Gas・vacuum・shutter】A/B 【Low temp.】ohba.kouki 【LID power】M.Kawai/K.Nagahara 【Coil power】takami.shigeyuki 【central ctrl.】nonomura.miki 【data proc.】M.Ohsuna 【EXP LAN】inoue.tomoyuki	(IA)ICH, EUV/VUV spectrometers(Fe, W), CXS(H/He, F, Ne), TESPEL (TC)Off-axis ECH, LID (14:45-15:15), PCI, CXS, HIBP, Ti crystal, Zeff, FIR, Thomson (id:723) Impurity pellet/TESPEL (id:724) Impurity gas puff (id:731) Mag. Conf.: Using LID coil (id:747) ECH: EC wave injection for more than 10 s (Combined) (id:748) ECH: off-axis injection (Combined) (id:749) ICH: Antennae insertion for plasma heating by ICH : Subcool required

LHD project

Daily Schedule

Prepared by
N.Tamura

Date	Experimental Subject
2024/4/16(Tue)	Investigation of instability driven by ICRF fast ion Exposure of material samples into the LHD edge plasma by means of the manipulator measurement of fast ion distribution using the newly installed Imaging Neutral Particle Analyzer

Exp. No.	Experimental Session Group	Session Coordinator
1349	IA/MAP	R.Seki[2201] / M.Goto[2290] M.Shoji[2151] / K.Mukai[2240]

Time Table

8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	UP	[IA]		[MAP]	[IA]				DN					

Details and Experimental Conditions

Gas

[IA](10:30 ～ 12:30) ECH, NBI, ICH — H2,He,Ar

10:30-12:00 Investigation of instability driven by ICRF fast ion (R. Seki)
12:00-12:10 NBI calib.(3 shots)
12:10-12:30 [Change of Mag. Config.: 2.5 T -> 2.75 T]

Sequence:3min

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CW	3.6	2.5	1.2538	100.0	

[MAP](12:30 ～ 13:30) ECH, NBI, ICH — H2,He,Ar

12:30-13:30 Exposure of material samples into the LHD edge plasma by means of the manipulator
(C.P.Dhard (IPP), S. Masuzaki)

Sequence:3min30s

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

[IA](13:30 ～ 16:45) ECH, NBI, ICH — H2,He,Ar

13:30-14:00 [Change of Mag. Config.: 3.6m, 2.75 T -> 3.55m, 2.7887 T]
14:00-15:00 measurement of fast ion distribution using the newly installed Imaging NPA (S. Sangaroon (Mahasarakham Univ.), K. Ogawa)
[Change of Mag. Config.: 3.55m, 2.788T -> 3.9m, 2.5385T] may be done during 14:00-15:00
15:00-15:30 [Change of Mag. Config.: 3.55m, 2.7887T (or 3.9m, 2.5385 T) -> 3.6m, 1.25 T]
15:30-16:45 Investigation of instability driven by ICRF fast ion (R. Seki)

Sequence:3min

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CW	3.55	2.7887	1.2538	100.0	
2		CW	3.6	1.25	1.2538	100.0	
3	✓	CW	3.9	2.5385	1.2538	100.0	

Wall Conditioning

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

Remarks

(IA)DNPA, HIBP, CXS

(MAP)Sample manipulator (Port 10.5L)

【Precautions for today's LHD experiments】
(id:728) Mag. Conf.: 3.55 m =< Rax < 3.6 m
(id:747) ECH: EC wave injection for more than 10 s (Combined)
(id:749) ICH: Antennae insertion for plasma heating by ICH : Subcool required
(id:760) Insertion of sample, etc: Exposure of a material sample to divertor plasma by the manipulators

LHD project

Daily Schedule

Prepared by
N.Tamura

Date	Experimental Subject
2024/4/17(Wed)	Observation of gamma-ray emission from Li-H reaction for fast ion diagnostics/Understanding the dependence of fast ion distribution on various magnetic field configurations using the newly installed Imaging Neutral Particle Analyzer (INPA)

Exp. No.	Experimental Session Group	Session Coordinator
1350	IA	K.Ogawa[2229] / T.Kawate[2256]

Time Table

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

Details and Experimental Conditions	Gas
[IA](10:30 ～ 16:45) ECH, NBI, ICH 10:30-14:15 Observation of gamma-ray emission from Li-H reaction for fast ion diagnostics (H. Matsuura (Kyushu Univ.), K. Ogawa) 14:15-15:15 Understanding the dependence of fast ion distribution on various magnetic field configurations using the newly installed Imaging Neutral Particle Analyzer (INPA) (S. Sangaroon (Mahasarakham Univ.), K. Ogawa) 15:15-15:25 NBI Calib. (3 shots) 15:15-15:45 [Change of Mag. Config.: 3.60 m, 2.75 T -> 3.75m, 2.64 T] 15:45-16:45 Understanding the dependence of fast ion distribution on various magnetic field configurations using the newly installed Imaging Neutral Particle Analyzer (INPA) (S. Sangaroon (Mahasarakham Univ.), K. Ogawa) Sequence:3min	H2,He

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CCW	3.6	2.75	1.2538	100.0	
2		CCW	3.75	2.64	1.2538	100.0	

Wall Conditioning

GD(Before Exp.): None , GD(After Exp.): H2 , Cryopump(During Exp.): off

Remarks

(IA)Impurity Pellet(LiF), CXS(Li profile, Ion temperature profile), DNPA

【Precautions for today's LHD experiments】
(id:723) Impurity pellet/TESPEL
(id:749) ICH: Antennae insertion for plasma heating by ICH : Subcool required

LHD project

Daily Schedule

Prepared by
Y.Takemura

Date	Experimental Subject
2024/4/18(Thu)	Collisionality dependence of shielding threshold of external RMP Calibration of Solar EUV Spectrometers, Transport analysis of heavy impurity ions, Impact of turbulence reduction via boron injection

Exp. No.	Experimental Session Group	Session Coordinator
1351	IA/MAP	C.Suzuki[2255] / M.Kobayashi[2169] Y.Takemura[2167] / N.Kenmochi[2208]

Time Table

8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	UP	[IA]		[MAP]					DN					

Details and Experimental Conditions

Gas

[IA](10:30 ～ 12:15) ECH, NBI
10:30-12:15 Collisionality dependence of shielding threshold of external RMP (Y. Takemura)
0.9T→0.75T
#including NBI calibration shots

Sequence:3min

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CW	3.6	0.9	1.129	100.0	
2		CW	3.6	0.75	1.129	100.0	
3	✓	CW	3.6	0.5	1.129	100.0	

Gas: H2

[MAP](12:15 ～ 16:45) ECH, NBI
12:15-12:25 [Change of Mag. Config.: 3.6m, 0.75T -> 3.9m, 1.0T]
12:25-12:55 Calibration of Solar EUV Spectrometers and Validation of Diagnostic Capability for Solar High-Temperature Plasmas by LHD Experiments (H. Hara (NAOJ), I. Murakami)
12:55-13:00 NBI calibration (1 shot)
13:00-13:35 [Change of Mag. Config.: 3.9m, 1.0T -> 3.75m, 2.64T]
13:35-15:20 Transport analysis of heavy impurity ions in core plasma (S. Satake)
15:20-15:30 NBI calibration (3 shots)
15:30-15:45 [Change of Mag. Config.: 3.75m, 2.64T -> 3.6m, 2.75T]
15:45-16:45 Study of the impact of turbulence reduction via boron injection on impurity confinement and transport (D. M. Roque (Ciemat), N. Tamura)
including NBI calibration 1 shot

Sequence:3min

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CW	3.9	1.0	1.2538	100.0	
2		CW	3.75	2.64	1.2538	100.0	
3		CW	3.6	2.75	1.2538	100.0	

Gas: H2,He,Ar

Wall Conditioning

GD(Before Exp.): H2 , GD(After Exp.): He , Cryopump(During Exp.): on

Remarks

(IA)CXS, FTS, LID(10:30-12:15)

(MAP)TESPEL, CXS, HIBP, impurity pellet(W), Spectrometers, PCI, CECE

【Precautions for today's LHD experiments】
(id:723) Impurity pellet/TESPEL
(id:724) Impurity gas puff
(id:731) Mag. Conf.: Using LID coil
(id:738) Mag. Conf.: Exp. with low gamma (Combined)
(id:752) NBI: Injection into the discharges with low fields
(id:762) Impurity powder dropper

LHD project

Daily Schedule

Prepared by
T.Kawate N.Tamura

Date	Experimental Subject
2024/4/19(Fri)	Interplay of fast ions and impurities, Impurity exhaust by 3-ion heating electron-scale turbulence characteristics and its influence to transport, turbulence driven transport between LHD and W7-X

Exp. No.	Experimental Session Group	Session Coordinator
1352	IA/TC	T.Kobayashi[2231] / M.Nishiura[2184] T.Kawate[2256] / K.Ogawa[2229]

Time Table

8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	UP	[IA]					[TC]		DN					

Details and Experimental Conditions

[IA](10:30 ～ 14:45) ECH, NBI, ICH

10:30-12:10 Interplay of fast ions and impurities in LHD in helium (D. Moseev (IPP), K. Tanaka)
12:10-12:20 NBI calibration (3 shots)
12:20-12:40 [Change of Mag. Config.: 3.6m, 2.75T -> 3.6m, 2.68T]
12:40-14:25 Impurity exhaust by 3-ion heating at LHD (D. Moseev (IPP), K. Tanaka)
14:25-14:45 [Change of Mag. Config.: 3.6m, 2.68T -> 3.6m, 2.75T]

NBI pattern #3: (#2,#3,#4,#5) - (#2,#3,#4) - (#3,#4)

Sequence:3min

#	Option	Polarity	Rax(m)	Bax(T)	gamma	Bq(%)	Subcooled
1		CW	3.6	2.75	1.2538	100.0	
2		CW	3.6	2.68	1.2538	100.0	

Gas: H2,He,Ne,Ar

[TC](14:45 ～ 16:45) ECH, NBI, ICH

14:45-15:15 Investigation of electron-scale turbulence characteristics and its influence to transport (T. Nasu)
15:15-15:25 [Change of Discharge Sequence: 3 min -> 3 min 30 sec (Wall DC)]
15:15-16:45 Comparison of turbulence driven transport between LHD and W7-X (H. Sakai)

Sequence:3min, 3min30s(Wall DC)

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

Gas: He,Ar

Wall Conditioning

GD(Before Exp.): He , Cryopump(During Exp.): off

Remarks

(IA)ICH, EUV/VUV spectrometers(Fe, W), CXS(H/He, F, Ne), TESPEL

(TC)Off-axis ECH, LID (14:45-15:15), PCI, CXS, HIBP, Ti crystal, Zeff, FIR, Thomson

【Precautions for today's LHD experiments】
(id:723) Impurity pellet/TESPEL
(id:724) Impurity gas puff
(id:731) Mag. Conf.: Using LID coil
(id:747) ECH: EC wave injection for more than 10 s (Combined)
(id:748) ECH: off-axis injection (Combined)
(id:749) ICH: Antennae insertion for plasma heating by ICH : Subcool required