HL-2A Experimental Taskforce

**Taskforce 1 Auxiliary heating and current drive**

**Leader: Shaodong SONG and Xingyu BAI.**

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1.1) Low hybrid wave coupling, heating and current drive.

1.2) Power deposition and momentum of neutral beam injection

1.3) Heating and current drive of electron cyclotron wave.

1.4) ECCD/LHCD synergy

1.5) LHCD fully non-inductive current drive

1.6) Advanced operation scenarios

1.7) Effect of fuelling (gas puffing/SMBI/pellet, etc) on heating, current drive and confinement.

1.8) ECRH assistant start up and pre-ionized

**Taskforce 2 Core plasma confinement and transport**

**Leader: Zhongbing SHI and Deliang YU**

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2.1) Core heat transport

2.2) Core particle transport

2.3) Core momentum transport

2.4) Core impurity transport

2.5) Core turbulence

2.6) Energy confinement and scaling law

2.7) Non-local transport

2.8) Pinch effect

2.9) Diagnostics for core turbulence

**Taskforce 3 Edge plasma transport**

**Leader: Min XU**

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3.1) Edge heat transport

3.2) Edge particle transport

3.3) Edge momentum transport

3.4) Edge impurity transport

3.5) Edge turbulence and turbulent transport

3.6) Scrap-off layer physics

3.7) Development of edge diagnostics

**Taskforce 4 MHD instabilities**

**Leader: Yi LIU and Xiaoquan JI**

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4.1) Features and active control of sawtooth instability

4.2)  Physical mechanism and active control of NTM.

4.3) Physical mechanism and simulation of RMW

4.4) Effect of MHD on plasma confinement and transport

4.5) Disruption physics, prediction and mitigation.

4.6) Error field

4.7) Mode locking and plasma rotation

4.8) 3-D MHD physics

4.9) MH-related diagnostics

4.10) MHD theory and numerical simulation

4.11) Interaction of MHD and turbulence.

**Taskforce 5 Pedestal physics and ELM control**

**Leader: Longwen YAN and Wulyu ZHONG**

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5.1) Dynamics of L-H transition, pedestal structure and evolution.

5.2) ELM physics and control.

5.3) QH-mode and grassy ELMy H-mode

5.4) Pedestal quasi-coherent mode and turbulence.

5.5) I-mode

5.6) Effect of recycling and light impurity on pedestal

5.7) ELM filament

5.8) Improvement and development of SMBI fuelling technique

5.9) advanced diagnostics for pedestal region.

**Taskforce 6 Energetic particle physics**

**Leader: Wei CHEN and Yipo ZHANG**

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6.1) Confinement and transport of fast particle

6.2) Features of fast particle instabilities

6.3) Effect of fast particle on plasma confinement and transport.

6.4) Interaction of fast particle and MHD.

6.7) Active control of fast particle instabilities.

6.8) Runaway electron physics and control methods.

6.9) Features and physics of Alpha particle.

6.10) Diagnostics for fast particle.