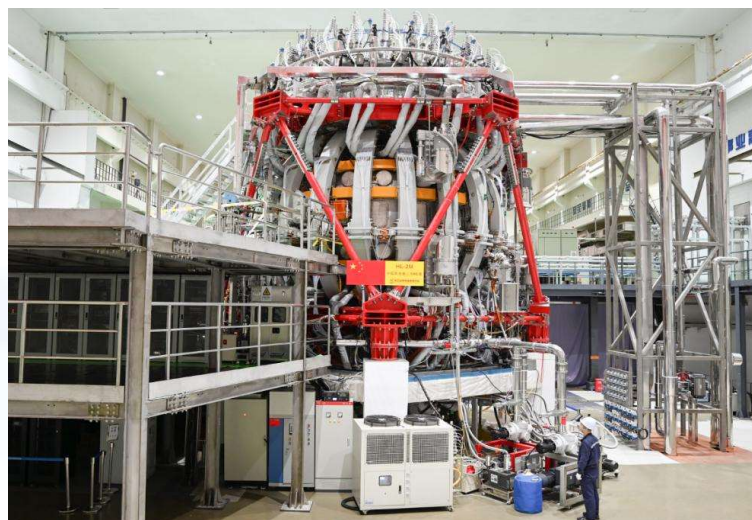


## Current Status of HL-2M

### Collaboration CNNC/SWIP and CEA/IRFM in the WEST Phase 2

## Status of HL-2M



Major radius	$R = 1.78$ m
Minor radius	$a = 0.65$ m
Plasma current	$I_p = 2.5$ (3) MA
Aspect ratio	$R/a = 2.8$
Elongation	$K = 1.8-2$
Triangularity	$\delta > 0.5$
Toroidal field	$B_T = 2.2$ (3) T
Flux swing	$\Delta\phi = 14$ Vs
Heating power	25 (27) MW

	NBI	ECRH	LHW
Present	5MW	5MW	2MW
Plan	15MW	8MW	4MW

$I_p(\text{MA})/B_T(\text{T})$	2.5/2.2	2.5/2.2	2.5/2.2
$\kappa/\delta$	1.8/0.5	1.8/0.5	1.8/0.5
$a/R(\text{m})$	0.65/1.78	0.65/1.78	0.65/1.78
$f_G$	0.6	0.6	0.5
$P_{\text{NBI}}/P_{\text{EC}}/P_{\text{LH}}$	15 / 8 / 2	15 / 8 / 4	15 / 8 / 4
$X_{\text{EC}}/X_{\text{LH}}$	0.3 / 0.7	0.3 / 0.7	0.3 / 0.7
$q_{95}$	3	3	3
$\beta_p$	0.98	1.00	0.95
$\beta_N/4I_i$	2.8 / 3.6	2.9 / 3.5	2.8 / 3.4
$f_{\text{BS}}/f_{\text{ni}}$	0.26 / 0.32	0.28 / 0.35	0.28 / 0.37
Te0/Ti0 (keV)	8.5/9.2	8.7 / 9.4	9.2 / 11
Te <sub>ped</sub> /Ti <sub>ped</sub> (keV)	1.5 / 1.4	1.6 / 1.5	2.2 / 2
ne <sub>ped</sub> /ne <sub>sep</sub> (1e19)	7.3 / 4.1	7.3 / 4.1	5.4 / 2.9
$W_{\text{th}}$ (MJ)	3.3	3.5	3.3
$H_{98}(Y,2)$	1	1	1

### Features:

- Small aspect ratio
- Demountable magnetic coils
- Flexible advanced divertor configurations
- Positive/negative triangularity

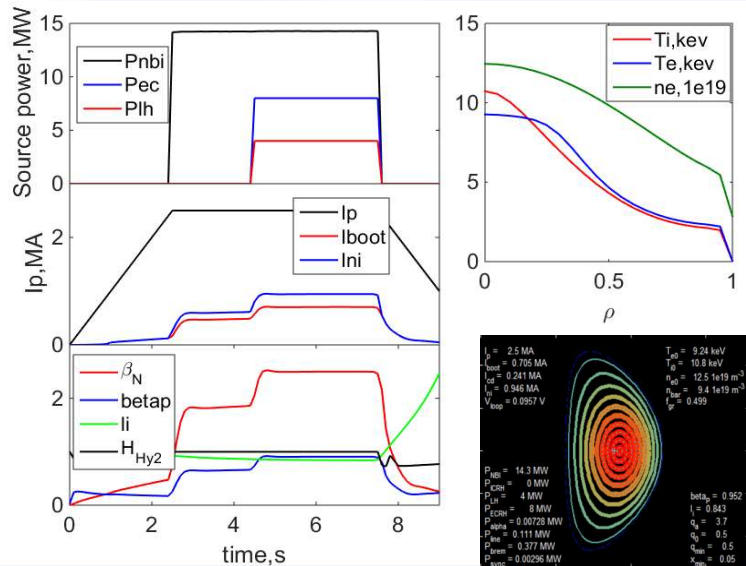
**First plasma achieved in Dec. 2020**



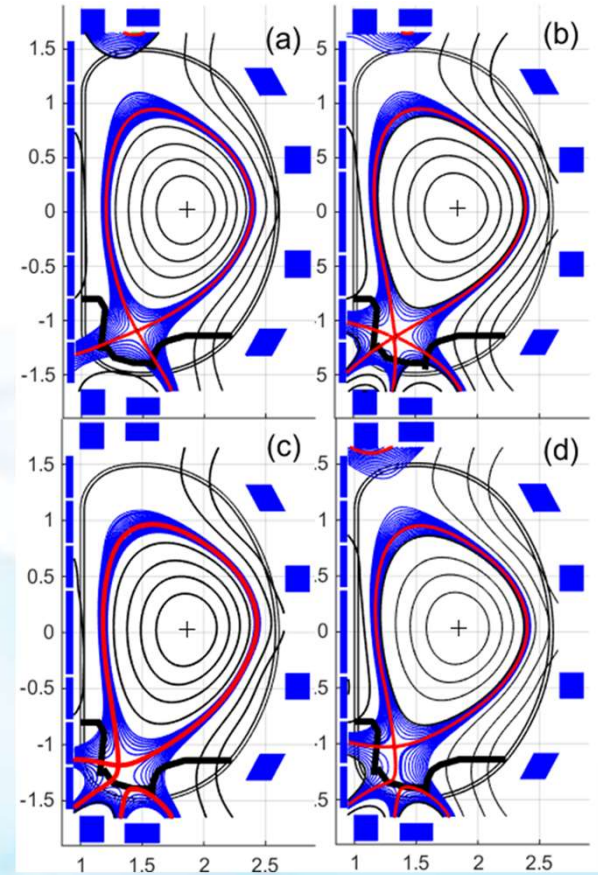
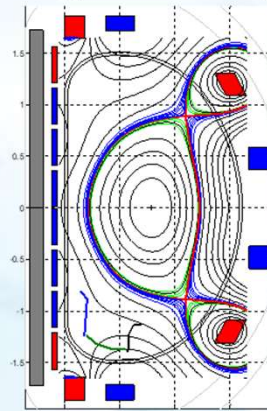
# Key missions of HL-2M

To support ITER, CFETR and next step devices

- ❑ Integration of physics and technology
- ❑ Advanced divertor configurations: physics and technology
- ❑ Tests and validation of high heat flux plasma-facing components
- ❑ Burning plasma-relevant physics



## Negative Triangularity



## Collaborative Research Outlook

### □ HL-2A/M and WEST

- Joint experiments: Investigation of pedestal instabilities and active control of ELMs. Advanced scenarios development: Operation and physics of high performance plasma
- Key technology for RF heating: Commissioning of LHCD in HL-2M. Investigation of ICRH system for HL-2M (on-going SIFFER Project). Development of 3MW/CW ECRH system for WEST

### □ Test the ITER probe sample/system

- Test preliminary designed ITER probe in WEST divertor, test its power supply system

### □ Projects under the SIFFER framework

#### ➤ Tungsten Divertor Project

Phase 1: PFU fabrication, qualification, installation in WEST -> achieved

Phase2: PMI study focusing on advanced tungsten materials.

#### ➤ ICRH for next step Project

Operating the ICRH in WEST for training of the joint ICRH team

Modelling of plasma scenarios with ICRH to support experiments.

#### ➤ IR-advanced technology Project

Optimizing IR system operation in WEST, Development IR system for HL-2M

