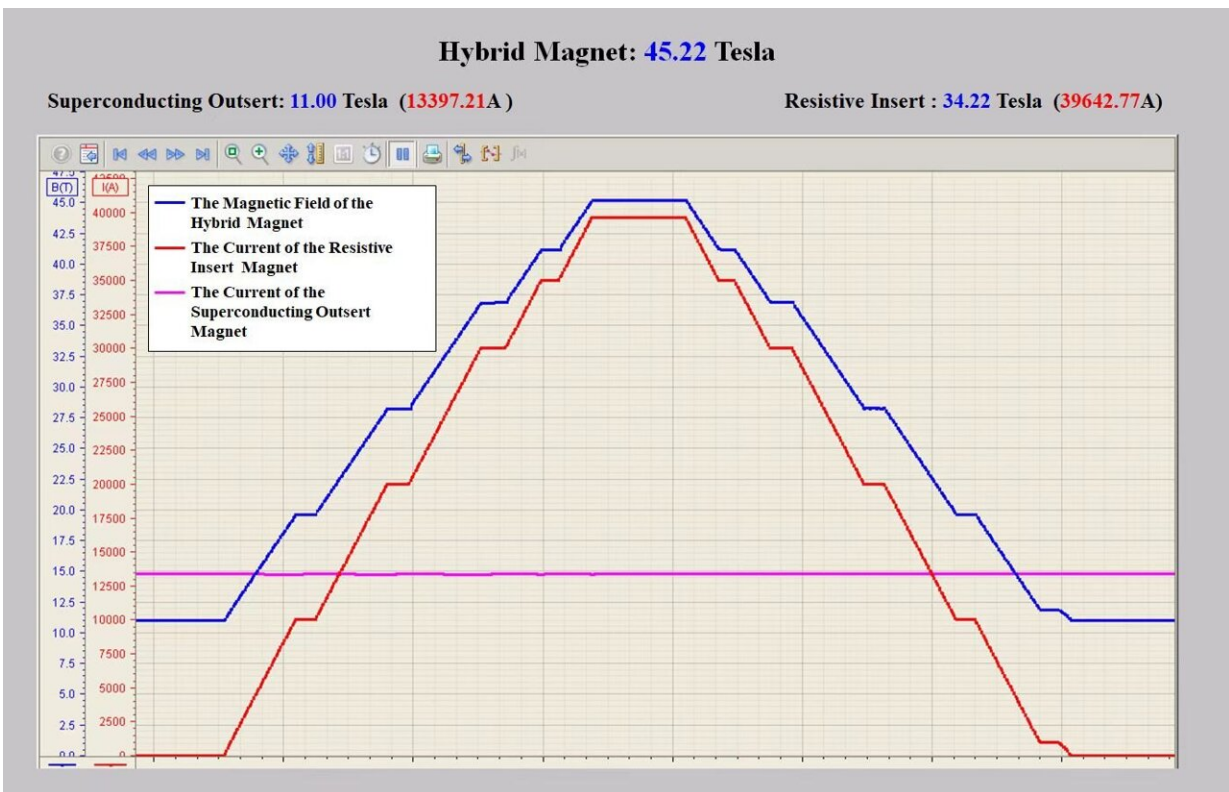


China claims new world record for strongest steady magnetic field

August 12 2022, by Huang Xiaomin, Zhou Shu



The new world record of 45.22 tesla steady state high magnetic field. Credit: SHMFF team

On August 12, the hybrid magnet of the Steady High Magnetic Field Facility (SHMFF) in Hefei, China, produced a steady field of 45.22 tesla (T), the highest steady magnetic field by a working magnet in the world.

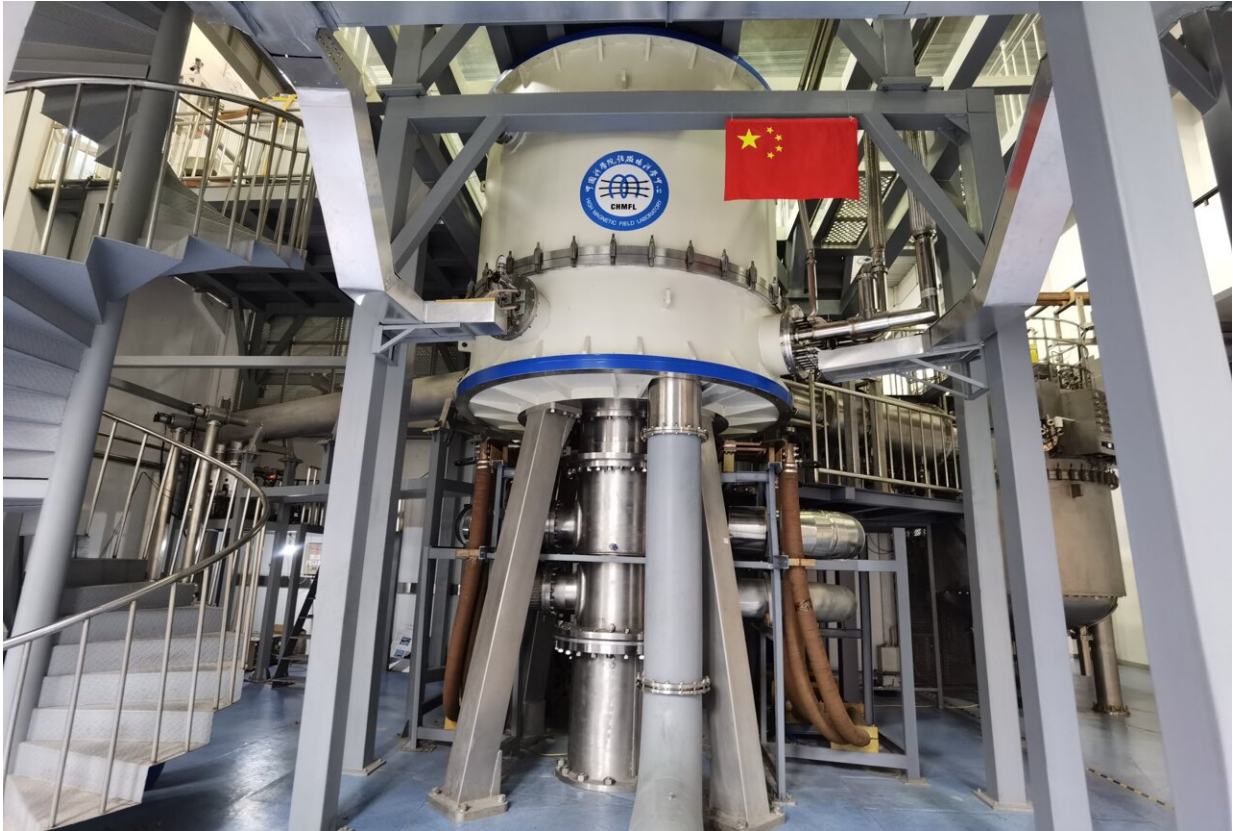
It broke the previous world record of 45 [tesla](#) created in 1999 by a hybrid magnet at the National High Magnetic Field Laboratory of the United States.

This 45.22 tesla hybrid magnet is composed of a resistive insert nested in a superconducting outer ring with a bore of 32mm.

Although facing great challenges, the team successfully constructed the hybrid magnet in 2016, which generated a central magnetic field of 40 tesla then, making it the second 40 tesla level magnet across the world.

40 tesla was apparently not the end. Since then, the team's pursuing of higher magnetic field has never stopped.

"To achieve higher magnetic field, we innovated the structure of the magnet, and developed new materials," said Professor Kuang Guangli, the academic director of High Magnetic Field Laboratory of Hefei Institutes of Physical Science, Chinese Academy of Sciences (CHMFL) where SHMFF is based. "The manufacturing process of the bitter discs was also optimized," added Kuang in a statement made on an on-site verification by seven academicians.



The hybrid magnet. Credit: The SHMFF team

The success of the 45.22 tesla magnet represents an important milestone in the development of magnetic technology in China and the world as well.

This magnet is one of the ten magnets developed and operated by CHMFL.

The lab in Hefei has previously set three world records with its resistive magnets.

SHMFF, a user facility, which now provides scientists worldwide the

strongest steady state [magnetic field](#), has operated more than 500,000 machine hours, providing over 170 institutes or universities at home and abroad experimental conditions for cutting-edge research of multi-disciplines.

Provided by Chinese Academy of Sciences

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