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## Sat-Af-Mem1-08: Experimental studies on performance of YBCO magnet in self-field and high field

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YBCO is one of the best choices for high field superconducting magnets due to its high current carrying capacity. We present a highly compact no-insulation (NI) magnet wound with 45-micrometer-thick YBCO high temperature superconducting (HTS) tape. A YBCO magnet with one double pancake (DP) coil generated a direct-current magnetic field of 28.20-tesla (the current is 740.4 A), the highest magnetic field generated solely by YBCO coil, at 4.2 K in self-field. Another YBCO coil with two DP coils was tested in a 34-tesla resistive magnet, and reached a 41.65-tesla central magnetic field (the current is 143.3 A). The structure of YBCO magnet, experimental test in self-field and high field were presented in this paper. The experimental results provide abundant evidence that YBCO magnets have great potential for high field application.

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