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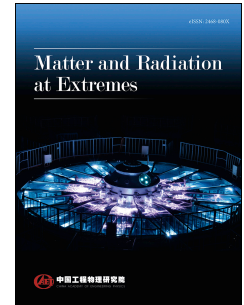
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Abstract: Wuhan National High Magnetic Field Center (WHMFC) at Huazhong University of Science and Technology is one of the top-class research centers in the world, which can offer pulsed fields up to 90.6 T with different field waveforms for scientific research and has passed the final evaluation of the Chinese government in 2014. This paper will give a brief introduction of the facility and the development status of pulsed magnetic fields research at WHMFC. In addition, it will describe the application development of pulsed magnetic fields in both scientific and industrial research.

Keywords: Pulsed high magnetic field, Pulsed magnet, Scientific research, Electromagnetic technology

PACS codes: 07.55.Db; 07.55.-w; 01.50.Pa

1. Introduction

High magnetic field is an important tool for scientific research and industrial applications, such as solid state physics, chemistry, medicine and high-energy physics^[1]. Typically, there are two kinds of non-destructive high magnetic field: continuous magnetic field and pulsed magnetic field. Compared with the former, the latter has much higher field strength, and it will play a more important and practical role in researches related with high field strength. Up to now, the 100-T non-destructive magnet at the National High Magnetic Field Laboratory (NHMFL) can overcome the mega-gauss barrier to produce 100.75 T field (world record)^[2]. The peak field of 94.2 T was produced in the Dresden High Magnetic Field Laboratory in Germany^[3]. The Laboratoire National des Champs Magnétiques Intenses (LNCMI) has also developed a user magnet at the level of 90 T^[4].

The pulsed high magnetic field facility at Wuhan National High Magnetic Field Center (WHMFC) was funded by the Chinese National Development and Reformation Committee (NDRC)^[5]. After 5 years of intensive work, the construction of the facility has accomplished all the goals of the research proposal and the developed high field facility could provide many opportunities for scientists in research fields including solid state physics, chemistry, medicine, plasma science and high-energy physics. This paper will present the performance of the high magnetic field facility and research work relevant to magnetic fields at WHMFC.

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