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## HT-7超导托卡马克上时间分辨中子注量率测量

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**摘要** 本文介绍了HT-7超导托卡马克上的时间分辨中子注量率测量系统。在高参数放电状态下,计算得到中子产额在 $10^8 \text{ s}^{-1}$ 量级,在靠近装置边上的中子注量率处于  $10^2 \text{ cm}^{-2} \cdot \text{s}^{-1}$  量级,因此,选择 BF<sub>3</sub>正比计数管作为探测器。经过多次实验,测量系统运行稳定可靠,测量得到的中子注量率和估算得到的中子注量率在误差范围内一致。

**关键词** [托卡马克](#) [中子产额](#) [时间分辨](#) [中子注量率](#)

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## Time-resolved Neutron Flux Density Measurement on HT-7 Superconducting Tokamak

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**Abstract** The time-resolved neutron flux density measurement system on HT-7 Tokamak is presented in the paper. When the machine is operated in high performance mode, the total neutron yield is estimated to be about  $10^8 \text{ s}^{-1}$ , and the neutron flux density near the vacuum vessel is about  $10^2 \text{ cm}^{-2} \cdot \text{s}^{-1}$ . Therefore, BF<sub>3</sub> proportional counter based system was constructed and successfully implemented on HT-7. The measurement system works stably during a series of experiments. The measured neutron flux density is in agreements with that from the numerical estimation.

**Key words** [Tokamak](#) [neutron yield](#) [time-resolution](#) [neutron flux density](#)

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