

中国原子能科学研究院第25届“五四”青年学术报告会议文选

电离法校准低能质子剂量技术

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摘要 本工作建立1套电离室绝对剂量测量系统, 对自制石墨电离室性能进行研究, 实验结果表明自制电离室系统满足标准电离室的要求。设计了1套基于同向测量的透射电离室, 用于在线监测束流变化, 为剂量测量的准确性提供了依据, 解决了替代法校准时束流波动对测量结果造成较大不确定度的问题。对已建立的电离室测量低能质子吸收剂量绝对测量系统进行不确定度评估, 合成标准不确定度约4%。最后, 以自行研制的质子剂量测量系统(电离室系统、透射电离室系统)在HI-13串列加速器上开展了对丙氨酸剂量计校准技术的研究, 获得了不同能量质子辐照下的RE值。

关键词 [电离室](#) [吸收剂量](#) [质子](#) [校准](#)

分类号

Calibration Method of Absorbed Dose for Low Energy Proton Using Ionization Method

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Abstract A set of dosimetry system with graphite ionization chamber for low energy proton beams was set up. The characteristics of self-developed graphite ionization chamber were studied. The results show that the self-developed graphite ionization chamber meets the requirement of standard ionization chamber. Transmission ionization chamber was designed and used to monitor the change of proton beams online, which increased the accuracy of results when calibrating the other dosimetry systems. Absorbed dose of low energy proton was measured by using self-developed dosimetry system with ionization chamber, and the composed standard uncertainty is 4%. The calibration method of alanine dosimeter was researched in the HI-13 Tandem Accelerator, and the RE specific values were obtained for the different proton energy.

Key words [ionization chamber](#) [absorbed dose](#) [proton](#) [calibration](#)

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