



MT 26
International Conference
on Magnet Technology
Vancouver, Canada | 2019

Contribution ID: 768

Type: **Poster Presentation**

Wed-Mo-Po3.04-04 [24]: Multiple redundant fuzzy-PID control technology for the scanning magnets of proton therapy nozzle

Wednesday, 25 September 2019 09:30 (1h 45m)

The scanning magnets in the proton therapy nozzle control the deflection of the proton beam by changing the magnetic field, so that the position of the proton beam can be controlled precisely, within 0.5mm error at lateral and longitudinal position. In order to meet the requirements for precise control of the beam position, a multiple redundant adaptive PID control system for scanning magnets is designed based on LabVIEW in this paper. It monitors the current of the scanning magnet coil and the actual magnetic field at the same time, then controls the output of the scanning magnet power supply separately through closed-loop positive feedback calculation, so that the entire magnetic field control system can maintain normal operation. And the fuzzy-PID control technology is added in the closed-loop program to improve the system response speed and adaptive computing ability, also increase the stability of the system.

Primary authors: HU, Yuying (HUST: Huazhong University of Science and Technology); TAN, Ping (HUST: Huazhong University of Science and Technology)

Co-author: LIN, Yinjie (HUST: Huazhong University of Science and Technology)

Presenter: LIN, Yinjie (HUST: Huazhong University of Science and Technology)

Session Classification: Wed-Mo-Po3.04 - Medical Applications