

技术及应用

乳腺专用PET符合处理电子学系统的研制

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摘要 中国科学院高能物理研究所研制了1台具有自主知识产权的乳腺专用正电子发射断层扫描仪。本工作从硬件架构和软件逻辑功能两方面对该样机的符合处理系统的研制进行介绍。在本设计中,符合处理系统采用FPGA高速数据接口和光纤互连技术获取前端连续采样板的预处理数据,然后采用符合时间窗的方法对挑选出的非零数据进行符合处理,最后通过千兆以太网将符合数据传给后端计算机进行重建。整个系统由局域控制总线进行控制。测试结果表明,符合处理系统的设计功能正确,性能优良。

关键词 乳腺专用正电子发射断层扫描仪 符合处理系统 FPGA

分类号

Development of Coincidence Processing Module for PEM

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Abstract For the breast cancer diagnosis and therapy, a prototype of positron emission mammography (PEM) was developed in Institute of High Energy Physics, Chinese Academy of Sciences. In this paper, the design of coincidence processing module (CPM) for this PEM was presented. Both the hardware architecture and the software logic were introduced. In this design, the CPM used the Rocket IO fast interface in FPGA and fiber technology to acquire the preprocessed data from the continuous sampling module (CSM) and then selected the valid event with the coincidence timing window method, which was performed in the FPGA on the daughter board. The CPM transmits the processed data to host computer via gigabit Ethernet. The whole system was controlled by CAN bus. The primary tests indicate that the performance of this design is good.

Key words positron emission mammography coincidence processing module FPGA

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