

基于FPGA的视觉电生理图像刺激系统的设计

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摘要：

传统的视觉电生理图像信号发生器都采用双显卡来实现，实时性和同步性较差，本文设计一种基于FPGA的新型视觉电生理图像刺激器，以硬件描述语言VHDL(Very-High-Speed Integrated Circuit Hardware Description Language)对可编程器件进行功能模块设计，设计VGA显示器的时序控制信号模块和刺激图像生成模块。实验表明通过对FPGA编程能实现不同颜色、不同空间频率、不同空间视野和不同显示方式的图像刺激系统，与传统的在Windows系统下通过双显卡来实现的刺激图像相比，实时性和同步性较好。

关键词：视觉电生理；FPGA；同步性；VGA；棋盘格

Design of the pattern stimulation system of the visual electrophysiology based on FPGA

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Abstract:

The traditional pattern signal generator of visual electrophysiology is done by the dual cards of the monitor, is poor in the real-time and synchronization. We design a new FPGA-based pattern visual electrophysiological stimulation which is designed by the hardware description language of VHDL (Very-High-Speed Integrated Circuit Hardware Description Language) designed to generate the functional modules of timing control signals of VGA and the stimulation pattern generation module on the programmable devices. By the generation of stimulation pattern by FPGA to replace the original Windows system software, the visual electrophysiology is better in real-time and synchronization than the traditional one.

Keywords: visual electrophysiology; FPGA; synchronicity; VGA; checkerboard

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