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激光与光电子技术应用

准分子激光电源磁脉冲压缩开关的磁芯复位研究

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摘要: 为了解决高重复率下准分子激光电源磁脉冲压缩开关的磁芯复位问题,以理论分析为指导,结合磁开关工作特性,设计了一种磁芯精确复位电路,该电路可快速精确复位饱和后的磁开关。将此复位系统应用于准分子激光器脉冲电源测试其性能,复位电流在磁开关饱和后200μs内平息振荡。结果表明,这一磁芯复位系统可满足4kHz重复率下脉冲电源的复位要求。此研究对今后高重复率准分子激光电源的设计是有帮助的。

关键词: 激光器 复位系统 磁脉冲压缩 脉冲电源 准分子激光

Core reset in a magnetic pulse compression switch of an excimer laser power supply

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Abstract: In order to solve the core reset problem of a magnetic pulse compression switch in a high repetition rate excimer laser power supply, the working process of the magnetic switch was analyzed. With the theoretical analysis as a guide, combined with the operating characteristics of the magnetic switch, an accurate reset circuit was designed. The saturated magnetic switch can be reset quickly and precisely by this circuit. After measuring the performance of the reset circuit, the reset current subsided in 200μs after the magnetic switch saturated. The results show that the design can meet the requirement of the power working at 4kHz repetition rate.The research is helpful for the design of high repetition rate excimer laser power supply in the future.

Keywords: lasers reset system magnetic pulse compression pulse power excimer laser

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