

论文

大芯径光纤整形飞秒激光脉冲空间分布的研究

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摘要:

通过将1 kHz重复频率的飞秒放大激光脉冲耦合到大芯径(100 μm)阶跃光纤,在27 mm长的光纤中产生了环形空间光强分布,并在3 160 mm的长光纤中观察到平台型的空间光强分布,通过自聚焦效应对该现象进行了解释.结果表明,通过选择合适的光纤,可以实现对放大飞秒激光脉冲的有效空间整形,从而达到改善光束质量的效果.

关键词: 飞秒激光 大芯径光纤 光束空间整形 自聚焦

Spatial Shaping of Femtosecond Laser Pulse in Large-core Optical Fiber

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Abstract:

The experimental research on spatial shaping by injecting the amplified femtosecond laser pulse at the repetition rate of 1 kHz into a step fiber with core diameter of 100 μm is reported.Beam profiles with ring and tap-top distributions are observed in the fibers with length in 27 mm and 3 160 mm,respectively,which are explained by the self-focusing effect.A method is introduced to shape the beam profile of femtosecond amplified laser pulse by choice suitable fiber,therefore it can be used to improve the beam quality.

Keywords: Femtosecond laser Large-core optical fiber Spatial shaping Self-focusing

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