

论文

半外腔微片Nd:YAG正交偏振激光器及其在精密测角中的应用

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摘要:

设计了一种半外腔微片Nd:YAG正交偏振双频激光器。把2个1/4波片置于激光谐振腔内, 一个静止, 一个作360°旋转, 旋转引起2个1/4波片快轴之间的角度变化被激光器转化成激光2个频率之差的变化, 从而输出可调谐的双频激光。采用琼斯矩阵对光在腔内的本征模进行分析, 给出了双频频差的理论解释。讨论了一种体积小、分辨率高和可整周测量的新型Nd:YAG激光测角仪的潜在前景。

关键词: 微片激光器 正交双频激光器 测角

Semi-external cavity Nd:YAG microchip laser with orthogonal linear polarized dual-frequency output and its application in precision angle measurement

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Abstract:

The Nd:YAG microchip laser with orthogonal linear polarized dual-frequency output was designed. Two quarter-wave plates in which one is static, another rotates around in 360°, are set in the laser cavity. The intra-cavity variable birefringence caused by relative rotation of two wave plates in laser cavity results in changeable frequency difference of dual frequency. Thus, the output of the tunable dual-frequency laser is realized. The eigen-mode of laser in the cavity was analyzed with Jones matrix. The theoretical description for the frequency diversity of dual-frequency is presented. The potential laser goniometer with small volume, high resolution and ability of precision 360° measurement is discussed.

Keywords: microchip laser orthogonal dual-frequency laser angle measurement

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