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论文

飞秒激光泵浦I类BBO晶体中自发参量下转换的研究

尹娟娟,俞侃,包佳祺

(华中科技大学 文华学院,武汉 430074)

摘要:

实验研究了飞秒脉冲激光泵浦I类BBO晶体中自发参量下转换效应,以及产生的彩色锥形辐射现象.系统分析了各参量对二次谐波转换效率及彩色锥形辐射现象的影响.研究表明:蓝绿色锥形辐射具有最大的发散角,这与相位匹配理论模拟结果吻合.正入射时,增大泵浦光强及晶体厚度均会引起彩色锥形辐射亮度增加,且最大出射角中心波长往长波移动.不同光束偏振态下可依次观察到彩色锥形辐射、超连续现象.

关键词: [自发参量下转换](#) [彩色锥形辐射](#) [相位匹配](#) [二次谐波](#)

Spontaneous Parametric down Conversion in Type-I BBO Crystal Pumped by Femtosecond Pulses

YIN Juan-juan, YU Kan, BAO Jia-qi

(Wenhua College, Huazhong University of Science and Technology, Wuhan 430074, China)

Abstract:

Spontaneous parametric down conversion of the femtosecond pulse with a type-I β -barium borate (BBO) crystal was studied experimentally, which induced to the generation of colored conical emission (CCE). The influence of parametrics on the conversion efficiency and the characteristics of CCE was discussed in detail. Experimental results show that the green conical emission has the biggest divergence angle, which is consistent with the calculation results based on the phase matching condition. When the pumped beam is incident on-axis, the intensity of the CCE will become stronger with the increase of the pump intensity and the thickness of crystal, and the center wavelength of the biggest diverging angle conical emission will change toward long wave. CCE and super-continuum emission can also be observed with different polarization directions..

Keywords: [Spontaneous parametric down conversion](#) [Colored Conical Emission\(CCE\)](#) [Phase matching](#) [Second harmonic wave](#)

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通讯作者: 俞侃 (1978-), 男, 讲师, 主要研究方向为光通信器件与子系统. Email: onlyfish@126.com

作者简介:

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