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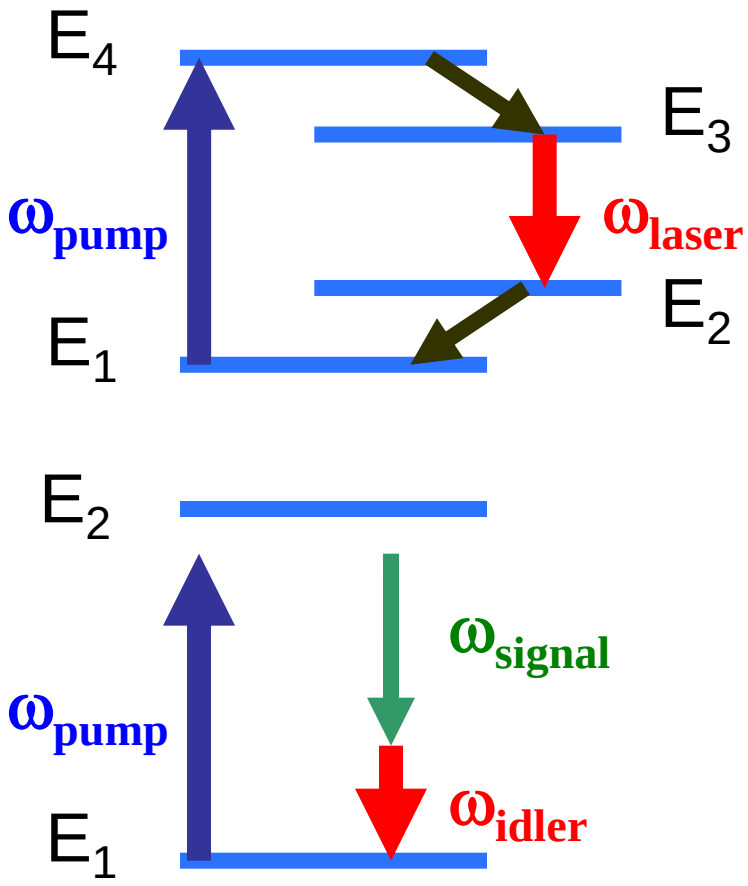
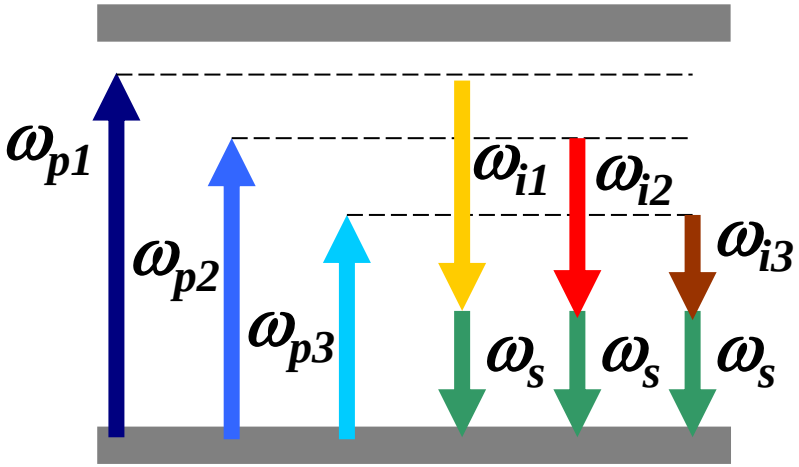
Parametrinis nekoherentinės spinduliuotės maišymas (daugiapluoštis fazinis sinchronizmas)



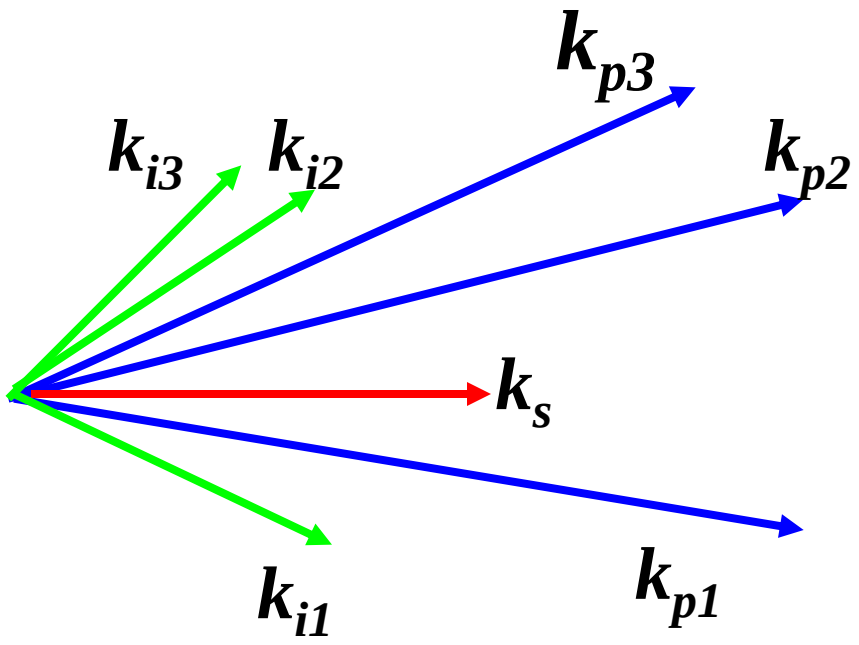


$$\omega_{pN} = \omega_s + \omega_{iN}$$

$$\vec{k}_{pN} = \vec{k}_s + \vec{k}_{iN}$$

$$\varphi_{pN} = \varphi_s + \varphi_{iN}$$

Parametrinis nekoherentinės spinduliuotės maišymas (daugiapluoštis fazinis sinchronizmas)



$$\vec{k}_{pN} = \vec{k}_s + \vec{k}_{iN}$$

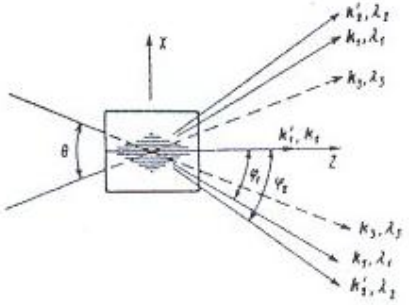
Optical parametric oscillation in an $LiNbO_3$ crystal in the presence of a photorefractive diffraction grating

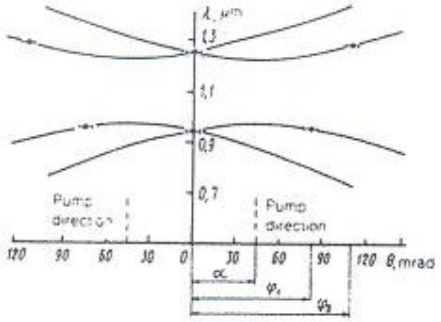
É. Gaĭzhauskas, A. Piskarskas, V. Smil'gyavichyus, and G. Shlekis

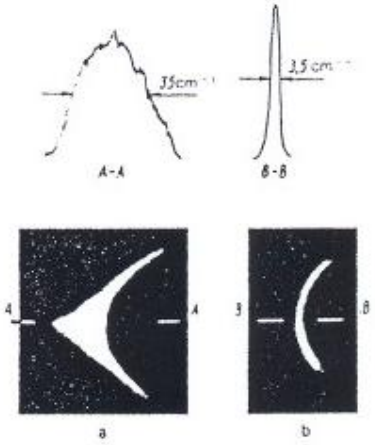
Vilnius University

(Submitted December 4, 1990)
Kvantovaya Elektron. (Moscow) **18**, 633–635 (May 1991)

An investigation was made of optical parametric oscillation in an $LiNbO_3$ crystal in the presence of a photorefractive interference diffraction grating induced in the bulk of a crystal by two pump beams. When the Bragg diffraction and noncollinear phase matching conditions were satisfied simultaneously by components of the radiation generated parametrically, selection was exhibited by the emission spectrum: the width of the spectrum in the plane of convergence of the pump beams was 3.5 cm^{-1} when the divergence of the radiation was 1 mrad.







Optics Communications 106 (1994) 69–74
North-Holland

OPTICS
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Two-beam pumped travelling-wave optical parametric generator

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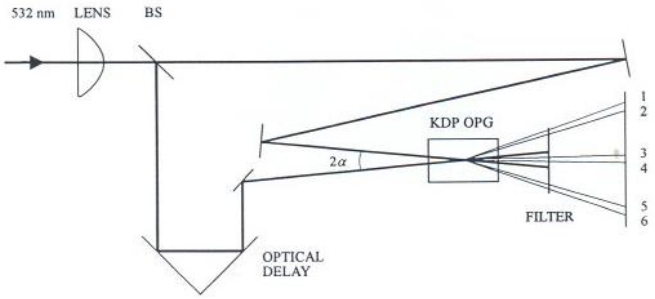
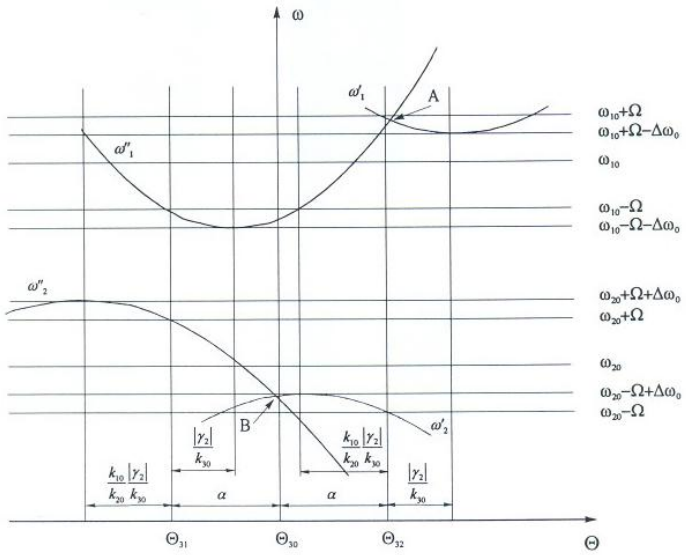
Received 4 June 1993; revised manuscript received 15 November 1993

The investigation results of a subnanosecond travelling-wave optical parametric generator (OPG) based on KDP crystal (type II phase matching) pumped by two intersecting beams are presented. It is found that the broad angular and frequency spectrum of OPG caused by noncollinear interactions can be significantly reduced by means of the double phase matching in the field of two pump beams. Two-beam pump technique should be very promising in picosecond and subpicosecond travelling-wave OPG to produce bandwidth- and diffraction-limited output.





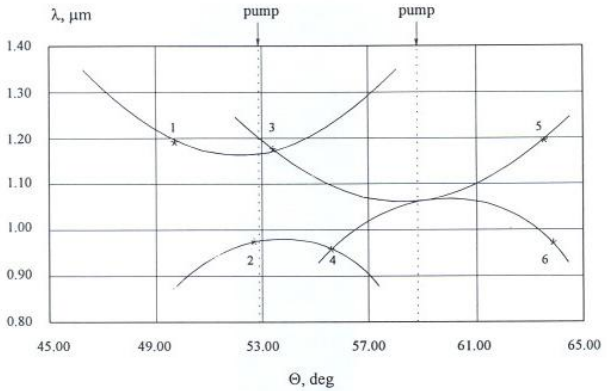
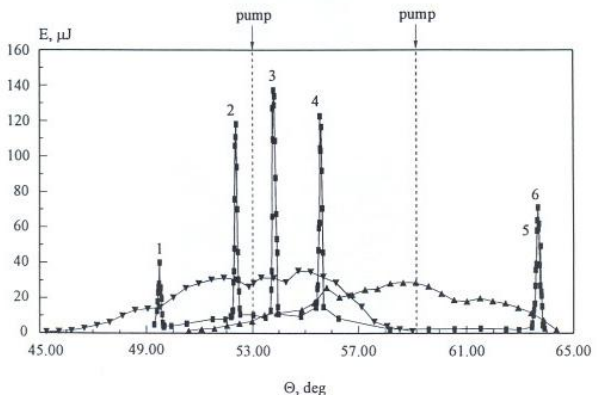


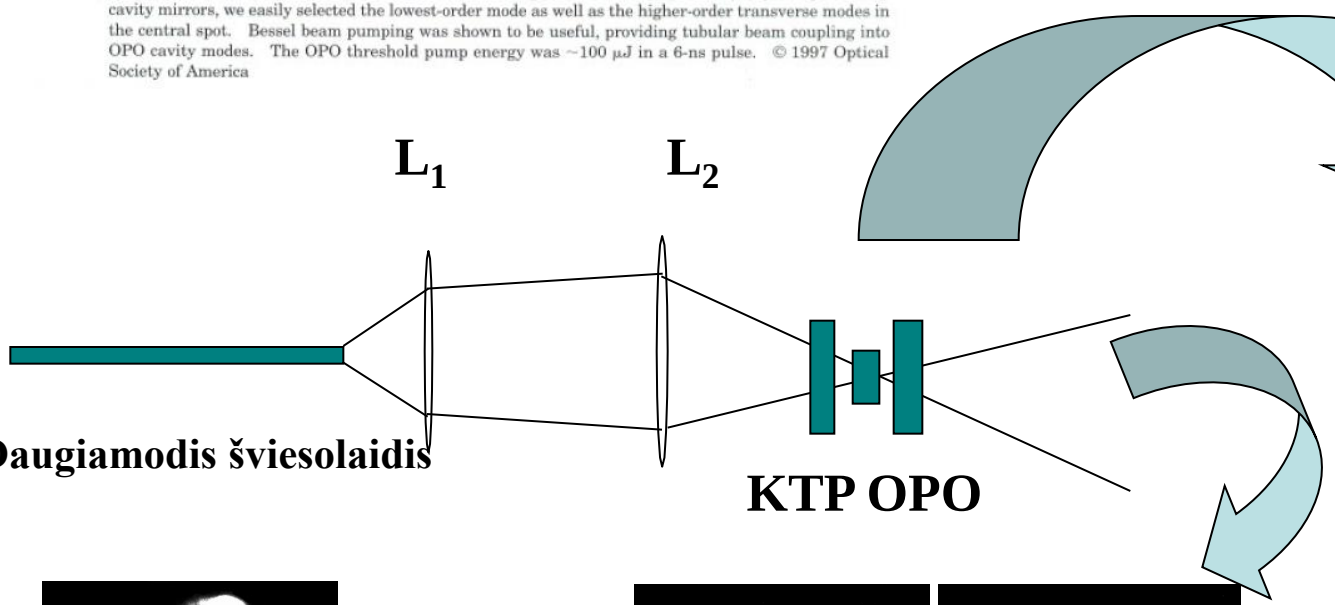
Fig. 5. Angular distribution of TBOPG output frequency spectrum. $2\alpha = 6.1°$.

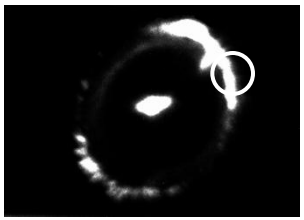


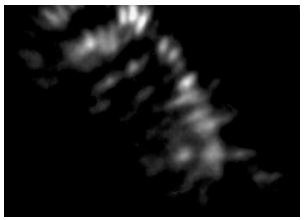
Optical parametric oscillator pumped by a Bessel beam

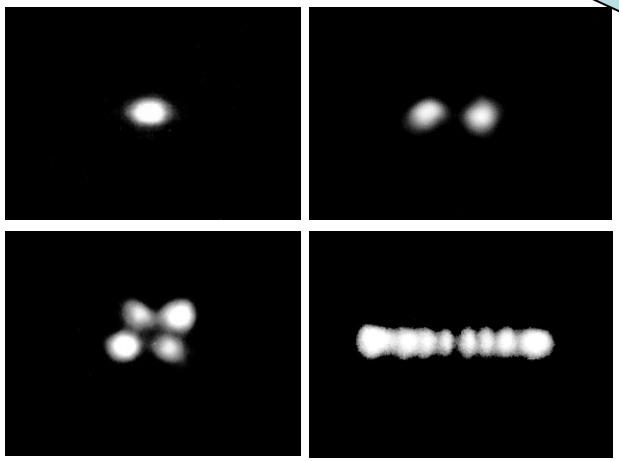
Algis P. Piskarskas, Valerijus Smilgevičius, and Algirdas P. Stabinis

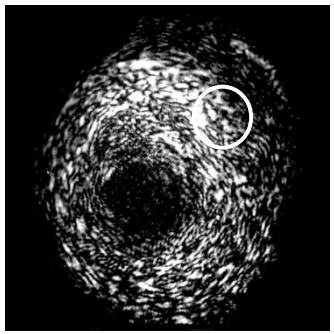
We demonstrate operation of a KTP optical parametric oscillator (OPO) pumped by a Bessel beam for the first time to our knowledge. It is shown that the output of the OPO has a transverse profile, which is consistent with noncollinear phase-matching relations defined by a conical pump. The central spot and ring related to the pair of signal and idler beams were generated in the OPO. By adjusting the OPO cavity mirrors, we easily selected the lowest-order mode as well as the higher-order transverse modes in the central spot. Bessel beam pumping was shown to be useful, providing tubular beam coupling into OPO cavity modes. The OPO threshold pump energy was ~100 μJ in a 6-ns pulse.











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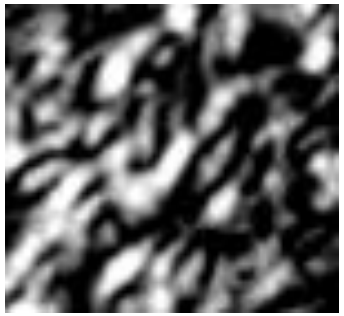

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15 December 1998

Optics Communications 158 (1998) 101–104

OPTICS COMMUNICATIONS

Parametric superfluorescence excited in a nonlinear crystal by two uncorrelated pump beams

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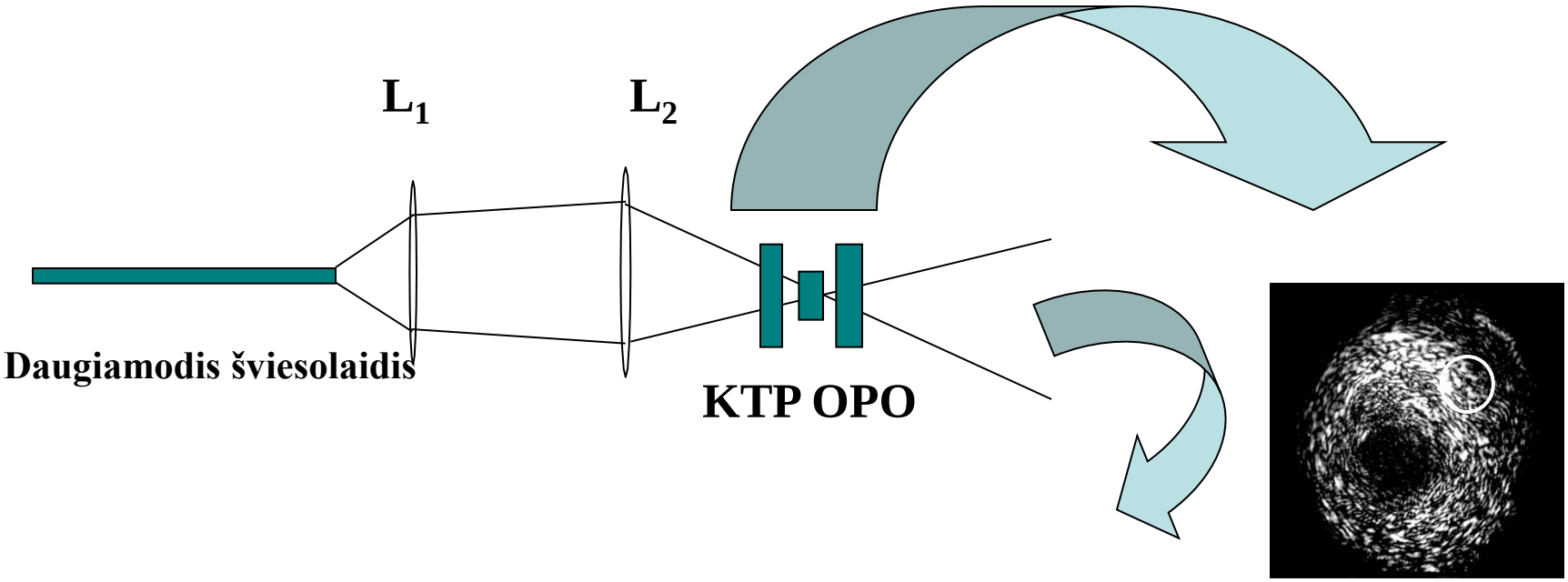
Received 13 July 1998; revised 7 October 1998; accepted 17 October 1998

Abstract

Experimental results of parametric superfluorescence excited in a single-pass KDP-based optical parametric generator (OPG) pumped by two intersecting uncorrelated beams (second and third harmonics of Nd:YAG laser) are presented. The observed angular structure of OPG output radiation is typical for cumulative action of pump waves when the parametric gain does not depend on their phases.

Keywords: Superfluorescence; Optical parametric generator; Nonlinear crystal

Parametrinė šviesos generacija žadinant dalinai nekoherentine spinduliuote



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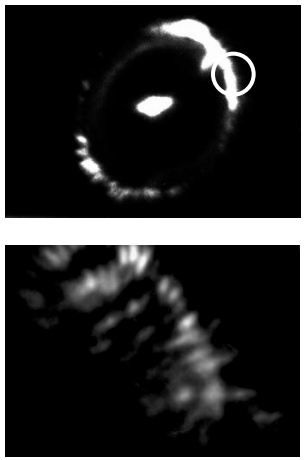

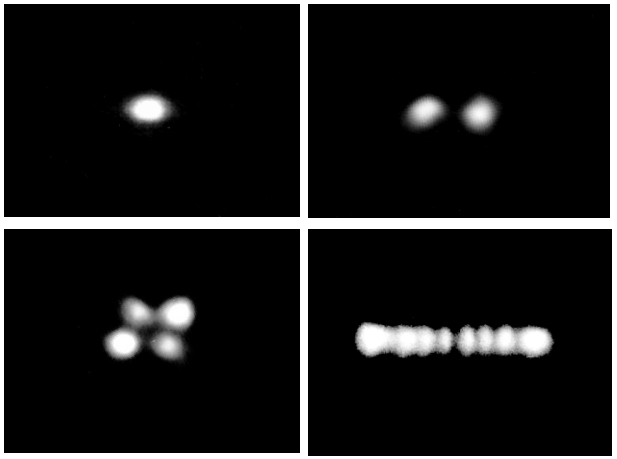

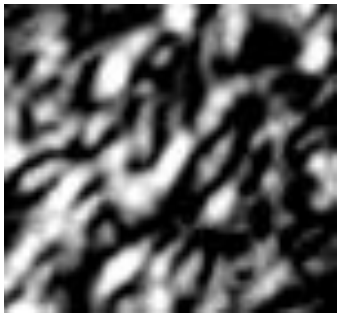

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1 November 1997

Optics Communications 143 (1997) 72–74

OPTICS COMMUNICATIONS

Optical parametric oscillation excited by an incoherent conical beam

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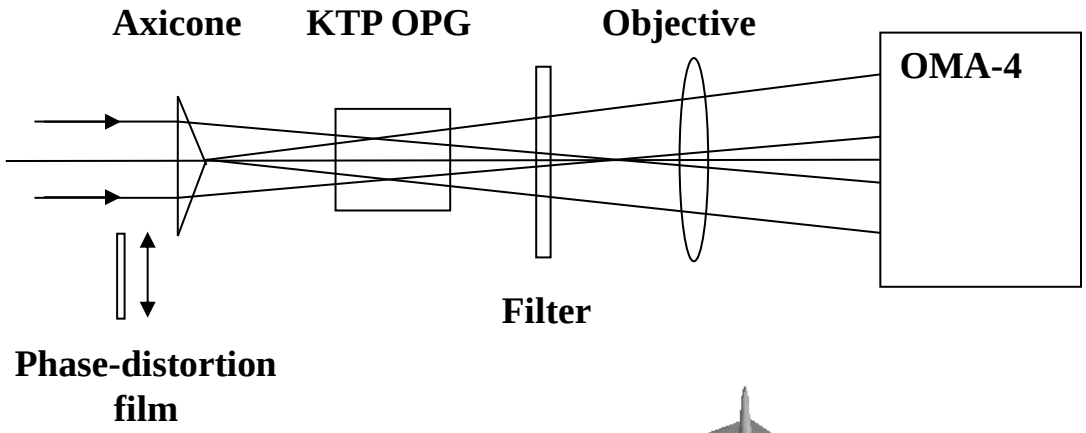
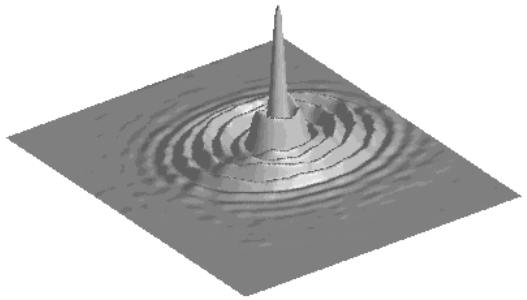
Received 25 November 1996; revised 12 March 1997; accepted 13 May 1997

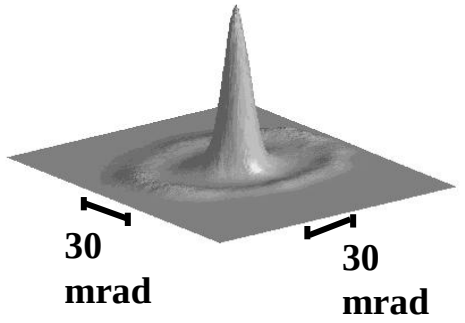
Abstract

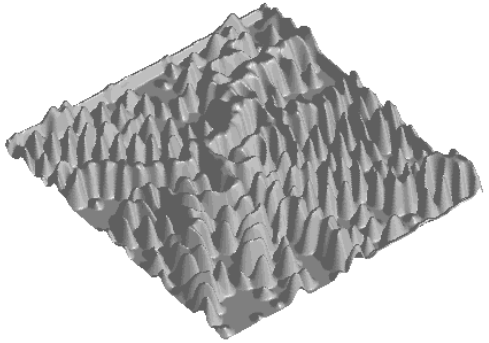
The operation of a KTP optical parametric oscillator pumped by an incoherent conical beam is demonstrated for the first time. The incoherent conical beam was produced by nonaxial excitation of a multimode fiber. It is shown that the OPO output radiation pattern in the far field consists of a coherent central spot (signal) and an incoherent ring (idler). The incoherence of the pump was transferred to the idler wave in accordance with theoretical predictions. By adjusting the OPO cavity mirrors, the lowest-order mode as well as higher-order transverse modes were easily selected in the central spot.

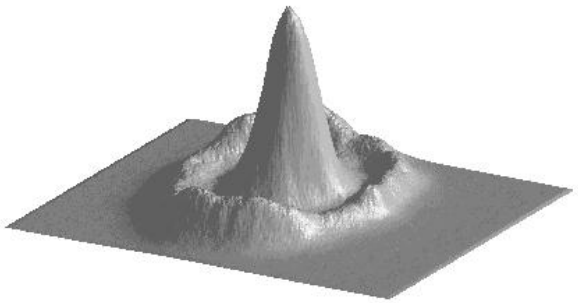
Parametrinis šviesos generatorius žadinamas Beselio pluoštu











15 May 2002

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Optics Communications 206 (2002) 201–209

OPTICS COMMUNICATIONS

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Nonlinear self-reconstruction of truncated Bessel beam

R. Butkus, R. Gadonas, J. Janušonis, A. Piskarskas, K. Regelskis, V. Smilgevičius *, A. Stabinis

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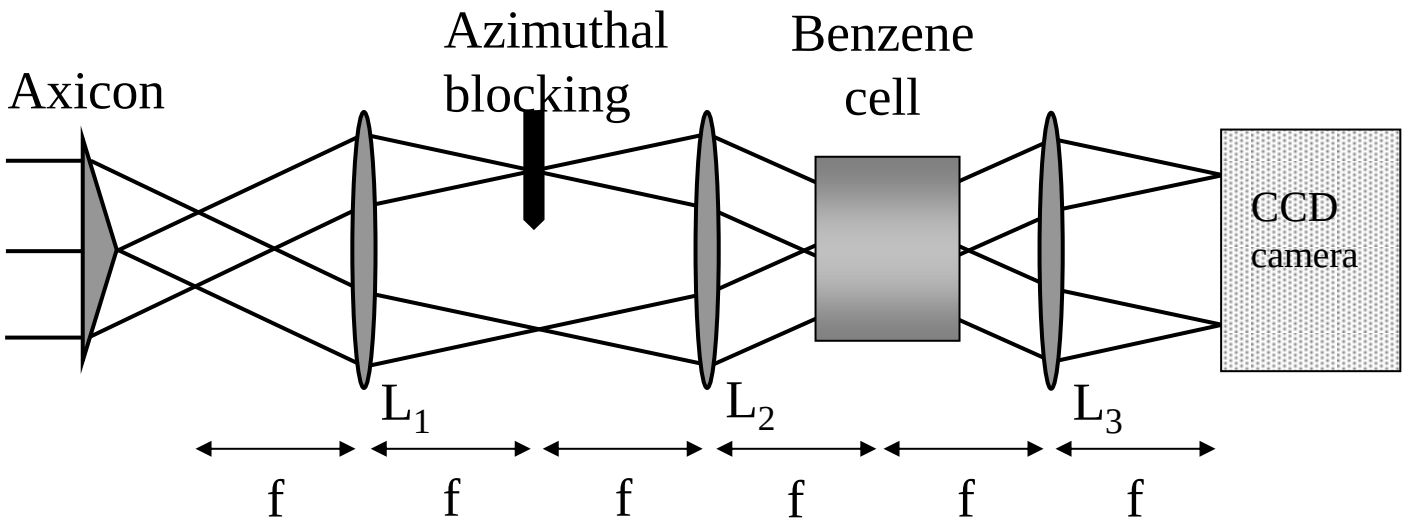
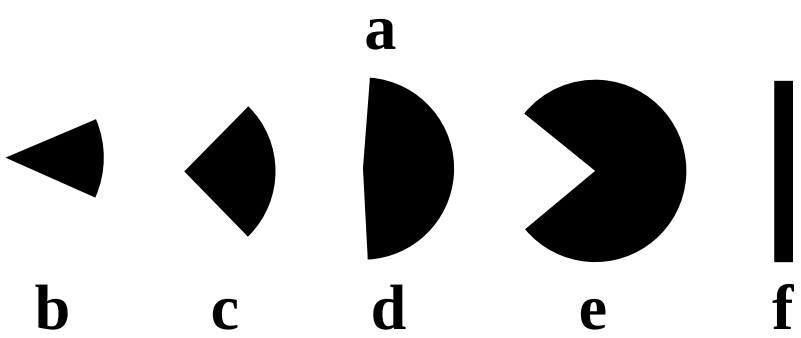
Received 1 February 2002; received in revised form 20 March 2002; accepted 21 March 2002

Abstract

It is demonstrated that by blocking of the part of Bessel light beam azimuthal aperture, a far field ring is completely reconstructed in azimuth and partially in intensity after the beam passes through a benzene cell. The phenomenon is explained as beam self-action (degenerate four-wave mixing) in the medium with Kerr nonlinearity. A qualitative agreement of the theoretical predictions with experimental results is obtained. © 2002 Published by Elsevier Science

Beselio pluošto rekonstrukcija izotropinėje netiesinėje terpėje





Eksperimentinė įranga

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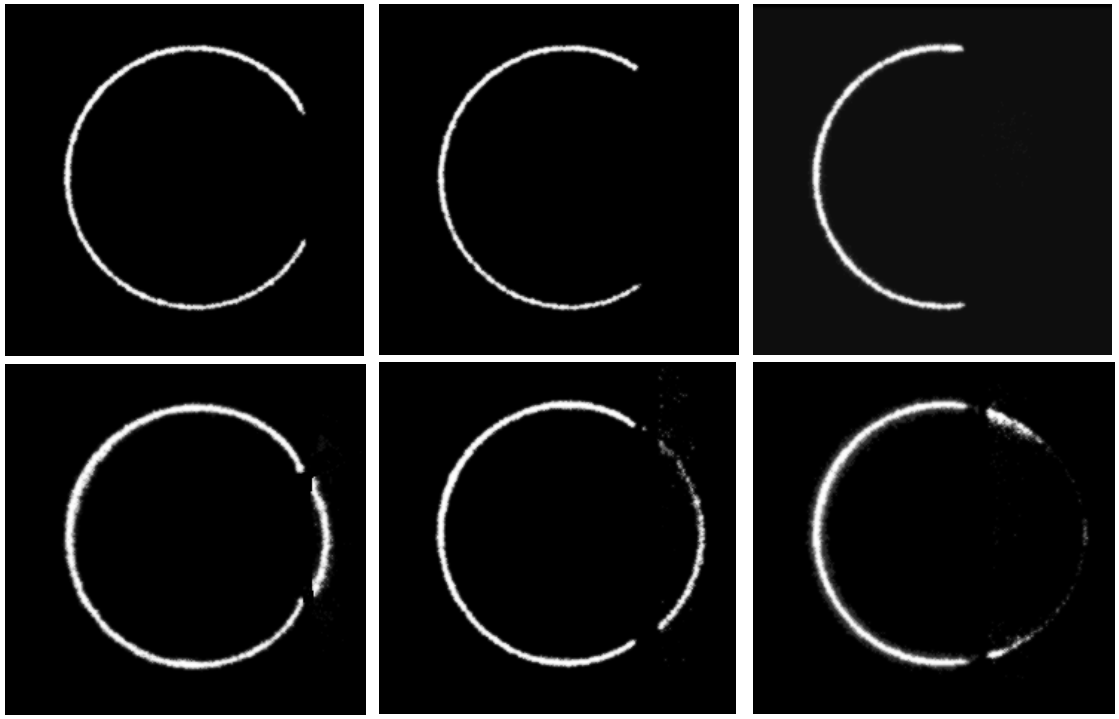
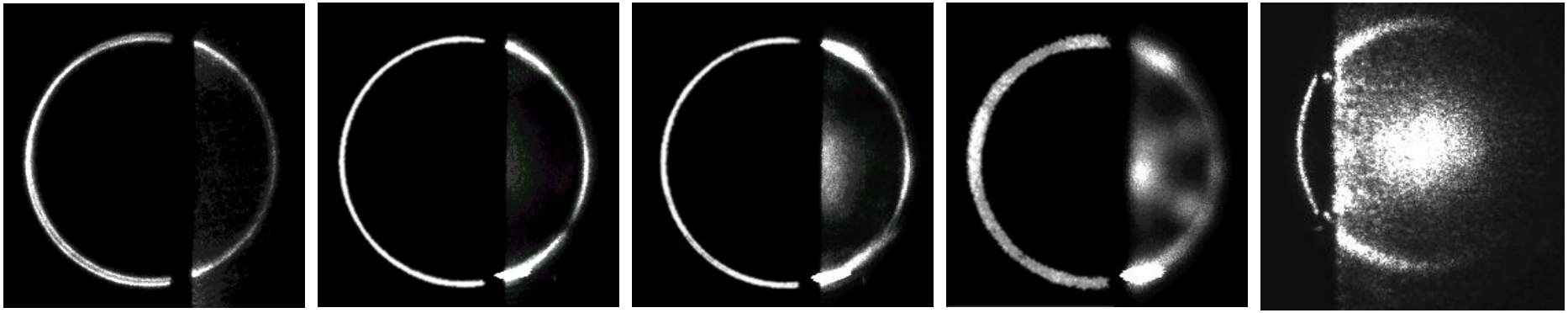


a b c

Apriboto Beselio pluošto kampinio spektro rekonstrukcija (45^0 (a,b), 90^0 (c,d), ~ 180^0 (e,f)) Beselio pluošto spektras prieš (a,c,e) ir po (b,d,f) the benzeno kiuvetės.

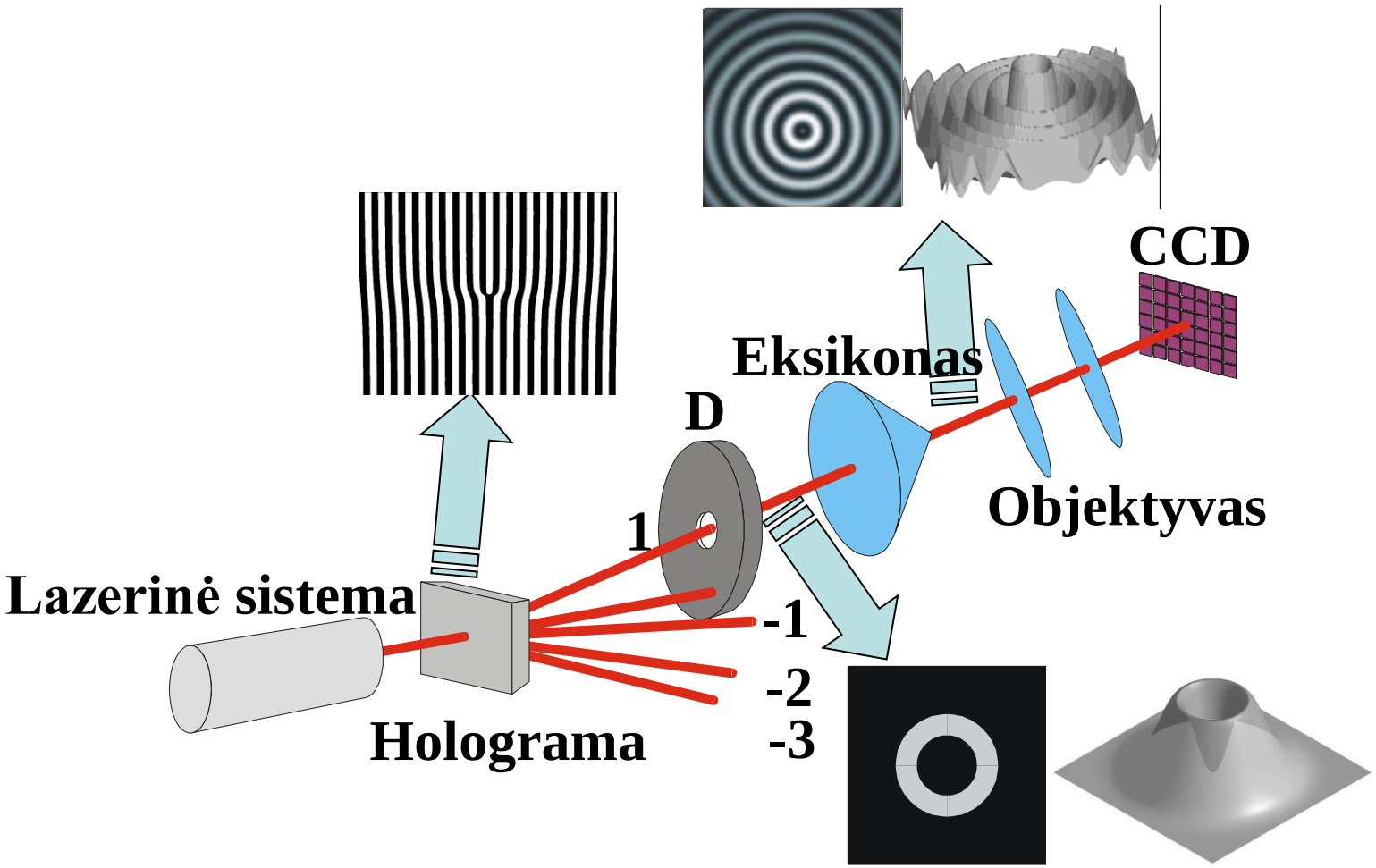
Beselio pluošto rekonstrukcija izotropinėje netiesinėje terpėje



a b c d e

Apriboto Beselio pluošto kampinio spektro rekonstrukcija žadinat skirtingos energijos impulsais (~180^0 (a,b,c,d), 270^0 (e). Žadinimo energija: **30 μJ (a), 50 μJ (b), 60 μJ (c), 100 μJ (d), 210 μJ (e).**

Aukštesnių eilių Beselio šviesos sūkurių formavimas eksikonu



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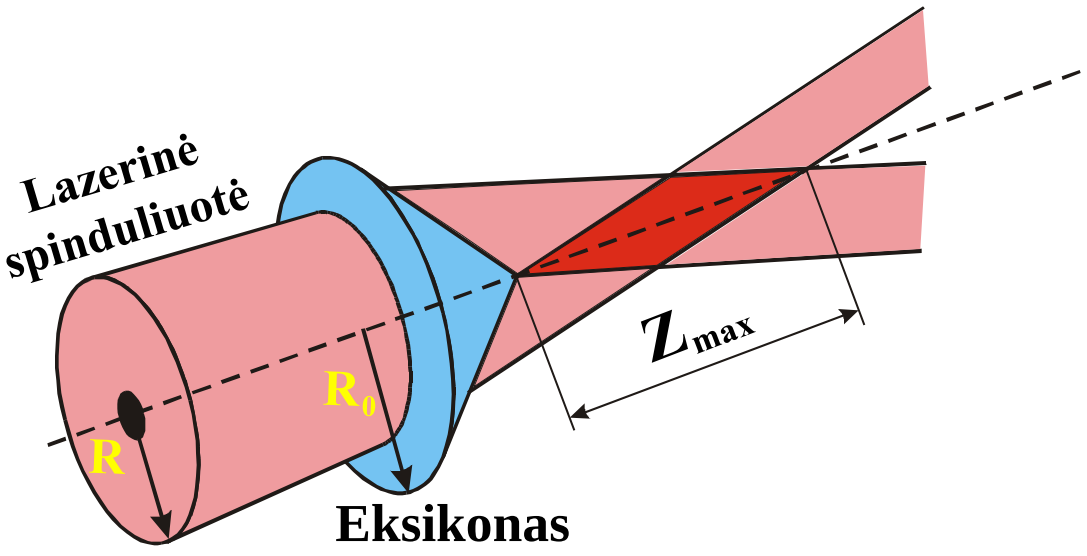

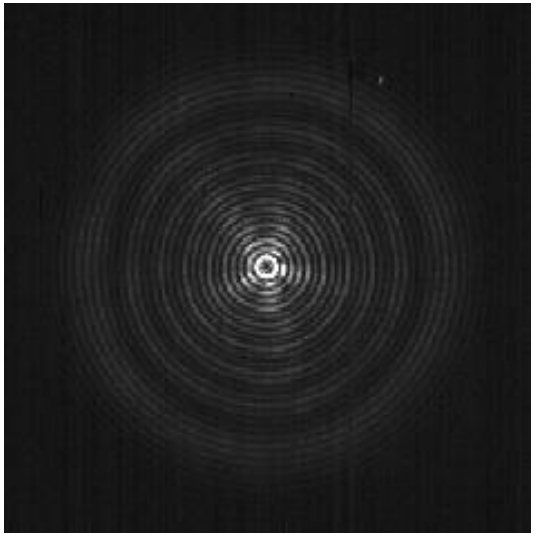

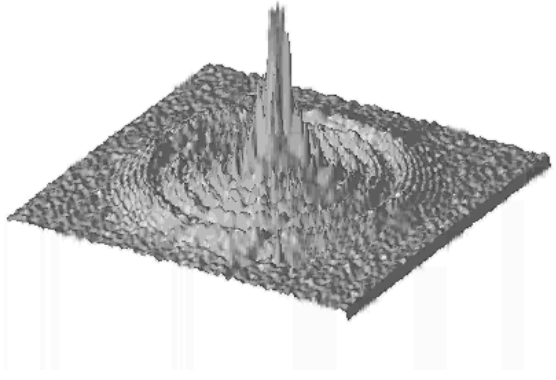

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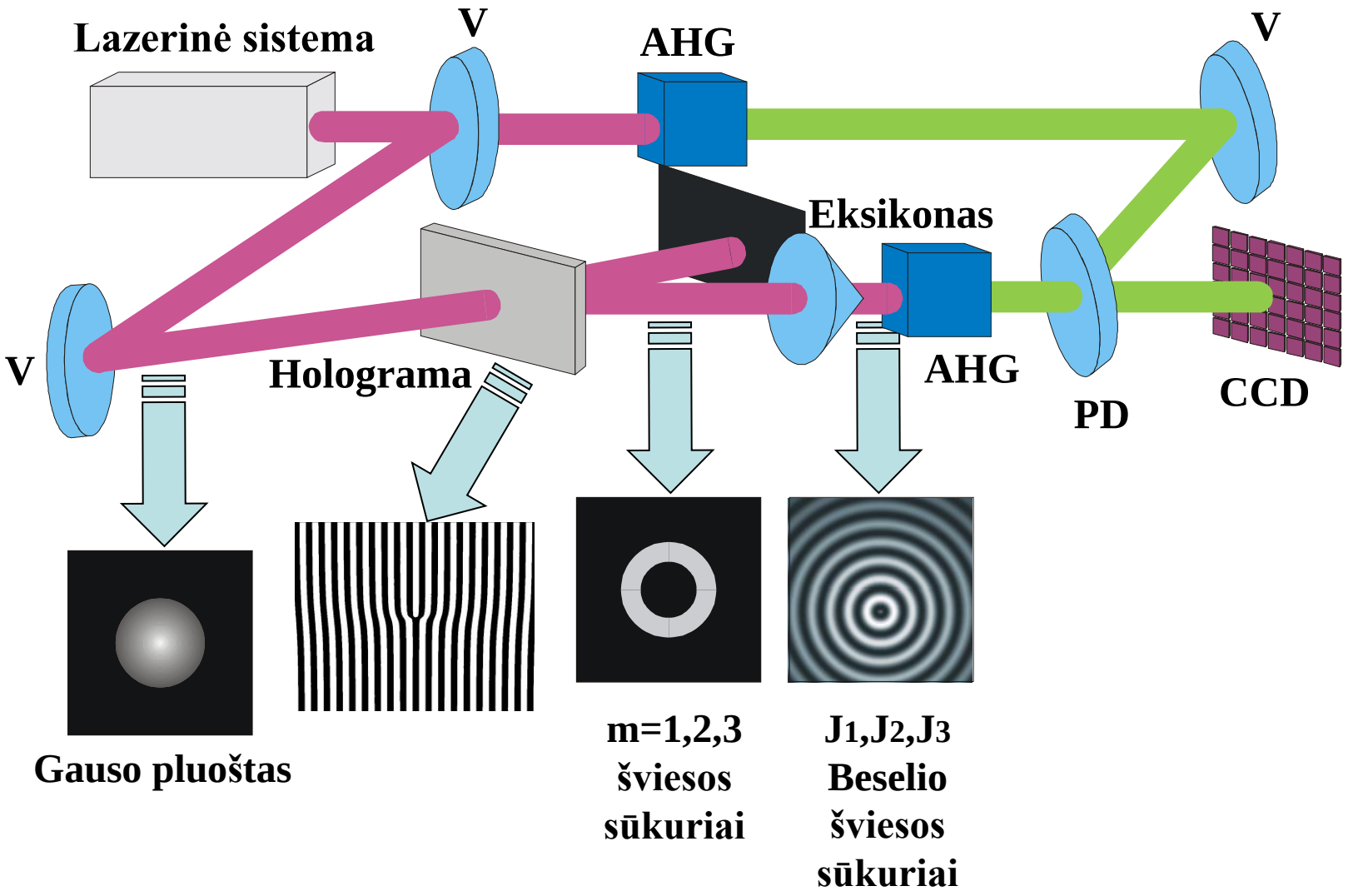
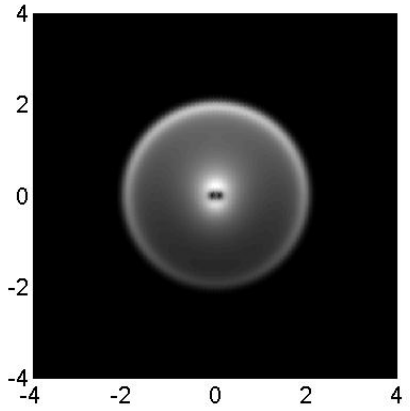


Skaitmeninis modeliavimas



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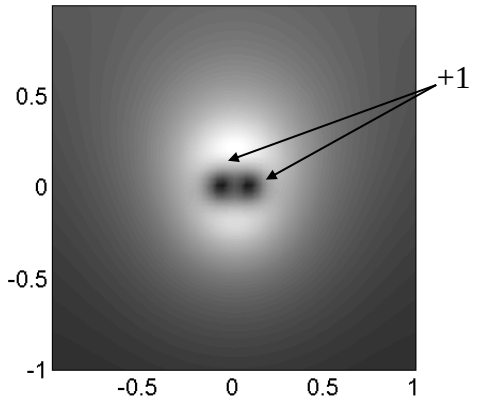

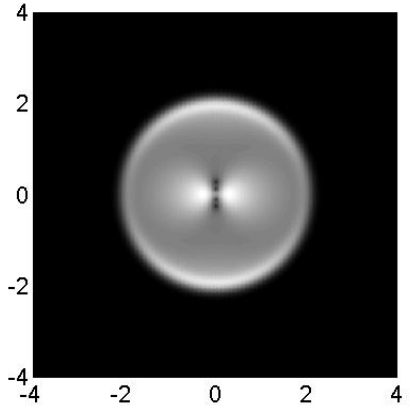

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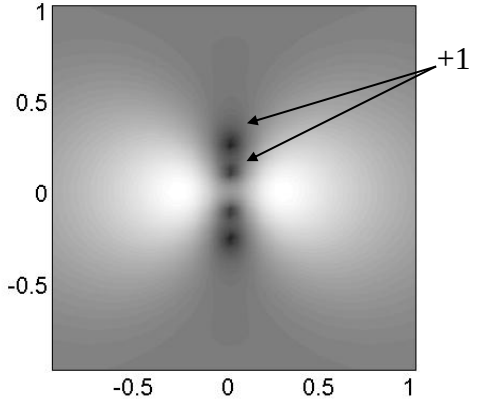

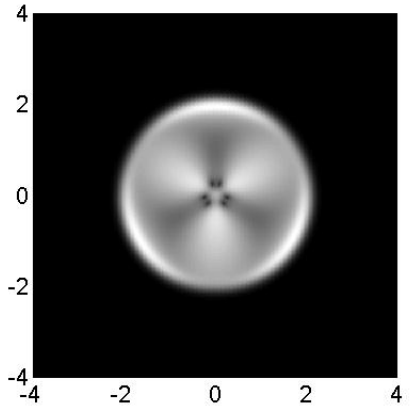

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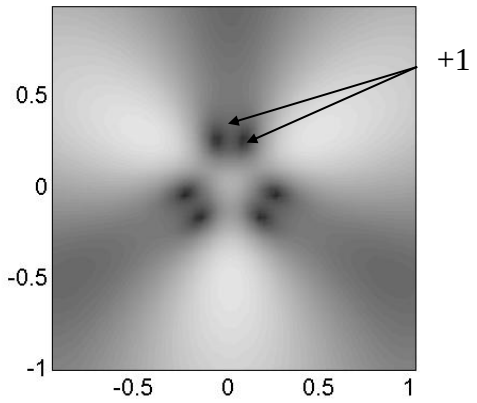
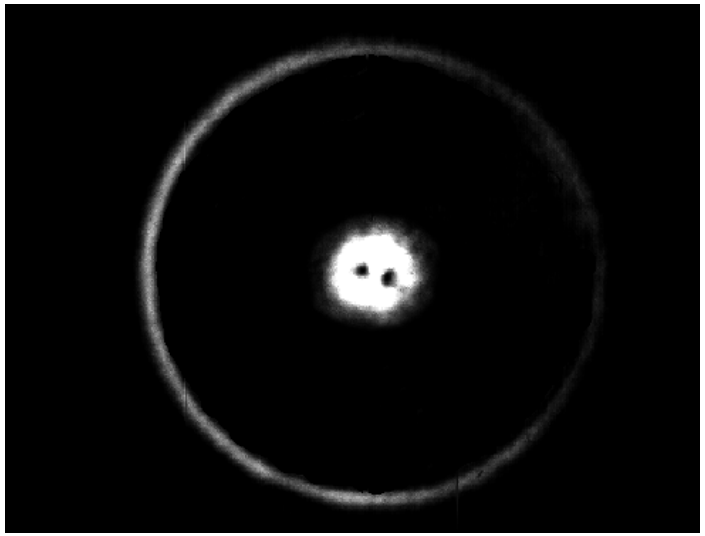
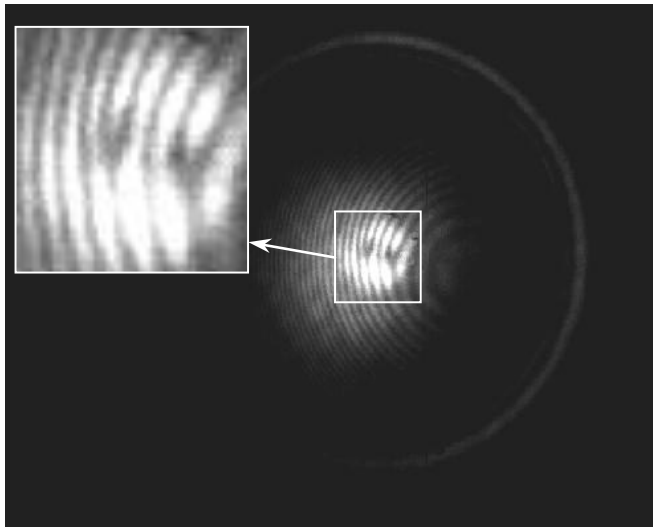
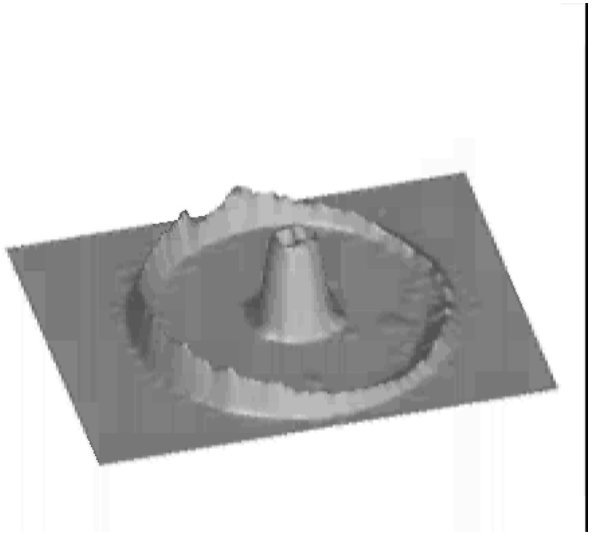


Beselio J_1 šviesos sūkurių antrosios harmonikos žadinimas

J_1

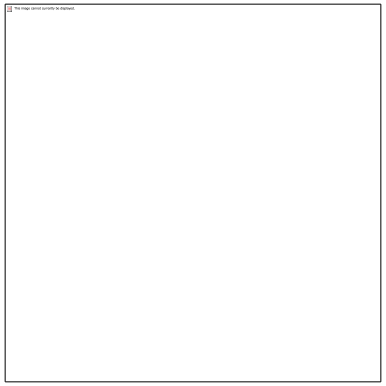


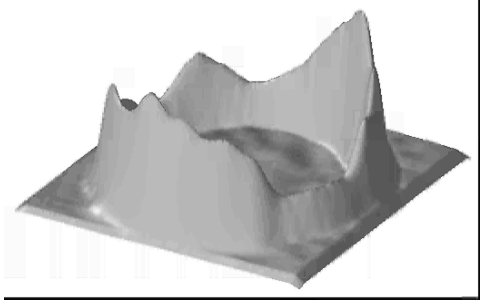


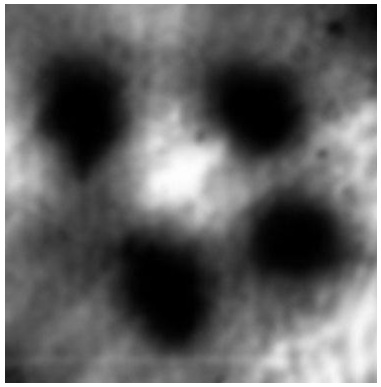


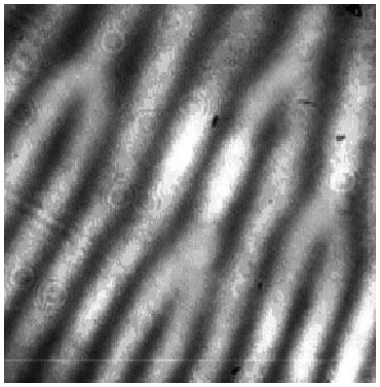
Beselio J_2 ir J_3 šviesos sūkurių antrosios harmonikos žadinimas

J_2

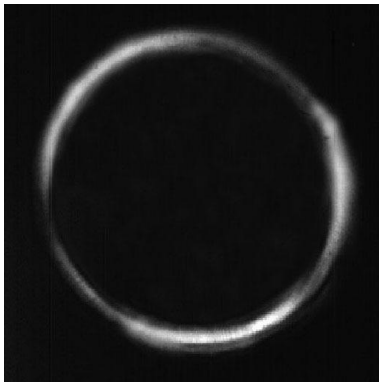


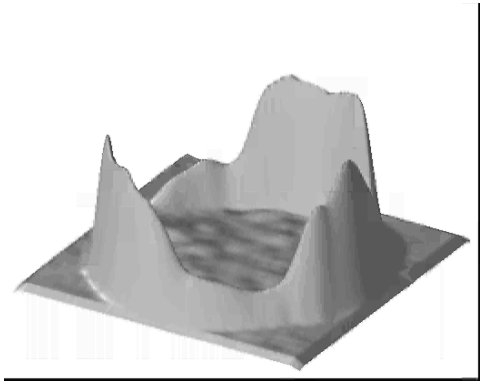


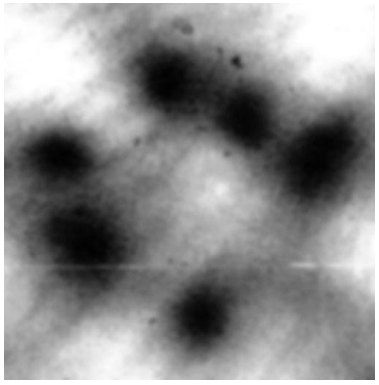


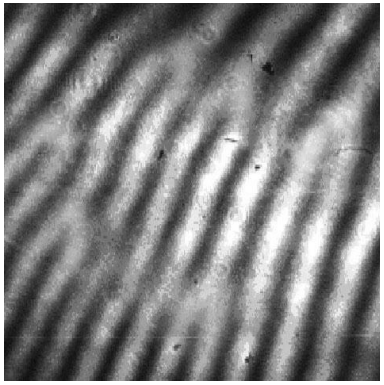


J_3









Prospects for increasing average power of optical parametric chirped pulse amplifiers via multi-beam pumping

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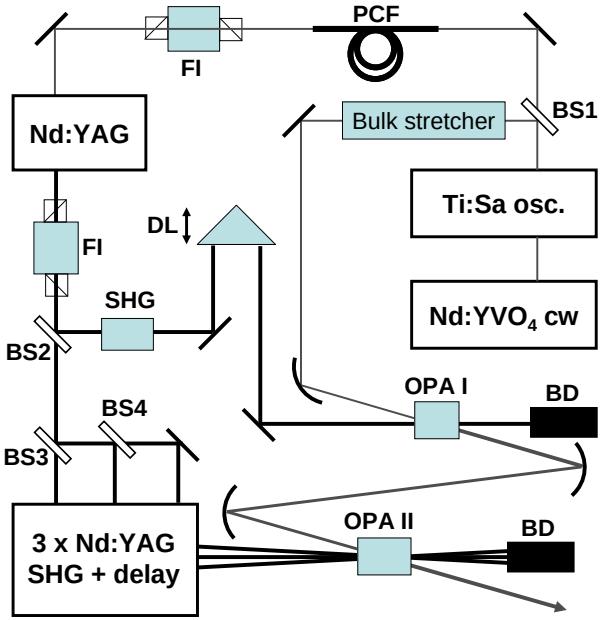
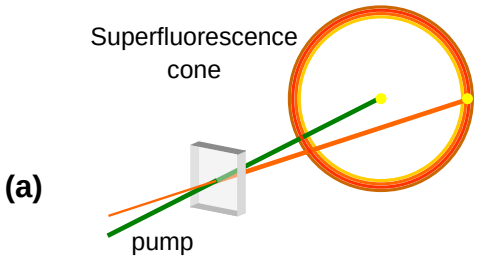
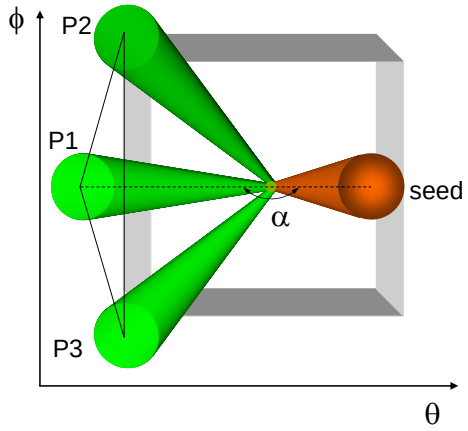
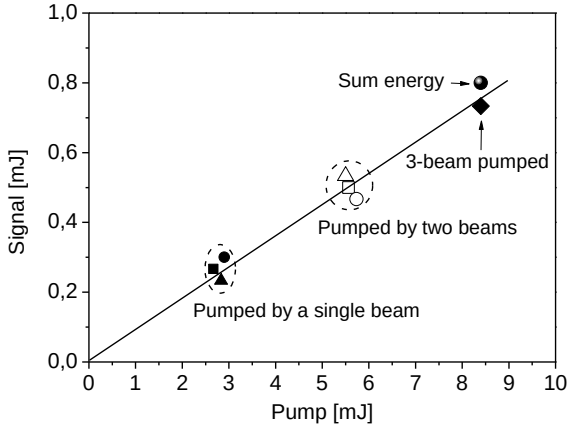
Department of Quantum Electronics, Vilnius University, Sauletekio Avenue 9, Building 3, LT-10222 Vilnius, Lithuania









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