

FORTHCOMING PAPERS

Coherent Addition of Laser Oscillators for Use in Gravitational Wave Antennas

G. A. Kerr, J. Hough (UK)

The amount of laser power required for the large scale interferometric gravitational wave antennas currently being proposed may well require the coherent summation of the light from several lasers. In this paper the feasibility of two potential summation schemes are experimentally compared and contrasted by adding the outputs of two argon lasers.

Self-Induced Polarization Rotation of Laser Beam in Resonance Media

S. A. Bakhramov, A. T. Berdikulov, A. M. Kokharov,
V. V. Tikhonenko (USSR)

The single-photon effect of the self-induced optical activity (SIOA) has been investigated experimentally for the first time in the vicinity of potassium $D_{1,2}$ lines. Experimental data of self-induced hyrotropy and dichroism are presented and compared with the theoretical model proposed earlier. The limiting action of SIOA on the efficiency of resonance parametric generators and polarization spectroscopy is outlined.

New FIR Laser Lines from CHD_2OH Optically Pumped by a cw CO_2 Laser

J. A. Facin, D. Pereira, E. C. C. Vasconcellos, A. Scalabrin, C. A. Ferrari (Brasil)

This work reports 83 new optically pumped far infrared laser lines, using deuterated methyl alcohol, CHD_2OH , as active medium. For each line we list the measured wavelength, its polarization relative to the pump line, the optimum gas pressure and the CO_2 laser pump power at the maximum absorption.

Intense Ultrashort Pulse Generation in a Two-Photon Pumped Generator-Amplifier System

P. Qiu, A. Penzkofer (F.R. Germany)

Intense ultrashort light pulses are generated i) by two-photon induced amplified spontaneous emission in a dye generator cell and ii) by two-photon induced seeding pulse amplification of a picosecond light continuum. The generated signals are amplified in a two-photon pumped dye amplifier. A passively mode-locked Nd:glass laser is used as pump source. Light pulses in the spectral region between 565 and 630 nm are generated in the dyes rhodamine B, rhodamine 6G, and PYC.

Pulse Formation in Synchronously Pumped Infrared Dye Lasers

U. Stamm, F. Weidner (GDR)

Pulse formation in synchronously pumped dye lasers with fast relaxing dyes is treated by computer simulation. The influence of spontaneous emission and chirp, as well as cavity mismatch, on the pulse characteristics and stability of generation are discussed.

Theoretical Analysis of Acoustic-Optic Frequency Shifter by Dual Mode Fiber

Chen Yijiang (Australia)

The frequency shifting between two modes in an optical fiber resulting from acoustic wave propagation has been studied theoretically. Our theoretical results confirm the earlier experimental work. The polarisation effect introduced by acoustic waves has been examined as well. The analysis shows that the polarisation characteristic and symmetry property of the modes are not preserved in the coupling process of acoustic-optic frequency shifting for arbitrary ratio of the fiber cladding radius to the acoustic wavelength d/λ_a , in contrast to stable mechanical microbending, and that for the given $d/\lambda_a = 0.397$, the polarised light signal at frequency ω_2 , shifted from that at frequency ω_1 , is quasi-linearly polarised for any acoustic-optic interaction length. However, the polarisation effect can be neglected when the fiber cladding radius is much smaller than the acoustic wavelength.

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