

JEMNÁ MECHANIKA A OPTIKA

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CONTENTS

The new approach in the NOLM design as an OTDM demultiplexer

(D. Grendár, M. Dado, M. Bystrianský, J. Dubovan)..... 191
This paper describes a new vision on the NOLM design as an OTDM demultiplexer. The first part of the paper discusses theoretical presumptions, next part consists of the mathematical investigation of a chosen architecture, and the final part presents the simulations of the proposed demultiplexer.

Optical Packet Header Recognition using Sagnac loop

(M. Bystrianský, J. Dubovan, M. Dado, D. Grendár) 195
Even though, the techniques of electronic packet switching are able to meet bandwidth requirement of today's network traffic, they are limited by abilities of installed electronic parts and demand for transferred data rate, which grows each year. The optical technology used in electronic packet switched networks is used only for point-to-point data transfers, where data are converted to electric domain for routing purposes, than they are processed and converted back to optical domain at the end of the node. The priority of networks evolution is to remove this conversion bottleneck and to process data in all-optical domain. Such a network which process data in all-optical domain is called the photonic network or the all-optical network.

Keywords: TOAD, OPS, switching, Sagnac Loop, packet, all-optical, switch, network, header

Security and CE marking of lighting units - general aspects

(P. Horňák) 198

Phase evaluation using interference of polychromatic light and colorimetric analysis (A. Mikš, J. Novák) 203

Measurements of very small phase changes in optical measurement techniques are usually performed by interferometric methods that are based on evaluation of interference patterns that correspond to a phase change of the investigated wave field. If values of the phase change are small, it is difficult to determine accurately the phase values, and one needs very expensive measurement systems. Our work presents a simple method for evaluation of small phase variations that uses the interference of polychromatic light. The phase change affects the color of the interference pattern, and color of the interference pattern corresponds to a specific phase change that can be evaluated using colorimetric analysis. The colorimetric phase evaluation method is described and analysed in our work. The proposed method offers accurate results and it is suitable for practical utilization in various fields of optical testing.

Linear CCD sensor for technical spectrometer

(L. Bartoněk, J. Kepřt) 209
This paper presents a way for practical use of the CCD linear sensor for scanning of light in some optical applications (spectroscopy). Number of effective pixels is 2048. Pixel size is 14 μm x 200 μm ultra-high sensitivity. Communication of the equipment (detector

CCD) with computer is realized by the help of a parallel interface of a personal computer (PC) without additive interface card. Continuity of data transmission is secured with help of programmatic break. Verification of the linear CCD camera is demonstrated on detection of the optical spectrum of the mercury lamp.

Optometry 2006 (J. Wagner) 213

X-Y stage for electron beam welder (I. Vlček, M. Zobač).... 214

This paper describes an X-Y stage for electron beam welder. This stage consists of two identical linear actuators, 50 mm travel each. The connection of actuators is variable, mutual angle and offset can be adjusted. Off-the-shelf linear ball bearings allow stage load up to 4 kg. Precise small stepper motors drive directly motion-screws through rigid clutches. The movement resolution is 2.5 μm . The stepper motors are controlled by programmable electronic unit. A user-friendly software interface for Delphi was created to make development of applications rapid and easy.

Solid Surface Topography by Form Talysurf Series 2 Instrument (M. Havelková, H. Hiklová, J. Vojtěchovská)..... 217

An instrument Form Talysurf series 2 is mechanical „contact“ inductive profilometer. Instrument is controlled by Ultra software, it incorporates calibration and measurement functions too. It includes roughness analyze and counting of the roughness (waviness and form) parameters of measured profile.

3D measurements are analyzed via PC using the TalyMap software. The package includes data manipulation tools such as high-resolution zooming, filtering, levelling by least square line removal, symmetries, rotations, threshold setting and cylindrical, spherical or polynomial form removal, profile extraction. Parameter sets include area and volume, counting and sorting, roughness and waviness in both 2D and 3D and automatic step height calculation. Data presentation tools include photo-realistic images in full color, meshed axonometric projections and contour diagrams.

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