

JEMNÁ MECHANIKA A OPTIKA

VĚDECKO-TECHNICKÝ ČASOPIS
ROČNÍK 57 4/2012

OBSAH

Modulárne metamorfne robotické systémy a popis ich kinematiky (Z. Bobovský, F. Trebuňa)	99
Experimentální a analytické řešení tenzorového napětového pole vetknutého nosníku (P. Macura, F. Fojtík)	100
Představení nejvýznamnějšího českého výrobce ručních palných zbraní	105
GSM alarm pro automobily	105
Útočná puška CZ 805 BREN	106
Měření aberací na základě rovnic pro šíření intenzity (J. Novák, P. Novák, A. Mikš)	108
K problematice magnetických polí v optické mikroskopii (E. Stránská, P. Novotný)	113
Recenze prvního českého překladu Keplerovy Dioptriky (J. Bajer)	116
Novinky na veletrhu AMPER 2012	117
Za Stanislavom Kolníkom (A. Štrba)	118
Nové produkty Meopty pro rok 2012 (V. Kohout)	120
Vývojové centrum INFRARED (F. Chlup, J. Oulehla)	122
Osvetlenie vonkajších plôch (P. Horňák)	123
Sálavé vyhřívání - využití metod optické radiometrie (M. Miler)	125
První šéfredaktor časopisu JMO Ing. Ladislav Slavkovský zemřel	127

Bližší informace o poslání časopisu, pokyny pro autory, obsah časopisu apod. je uveden na internetu: <http://jmo.fzu.cz/>

Informace o předplatném podá, objednávky přijímá, objednávky do zahraničí vyřizuje: SLO UP a FZÚ AV ČR, 17. listopadu 50, 772 07 Olomouc, tel.: 585 631 576, e-mail: eva.pelclova@upol.cz.

Cena čísla 40 Kč včetně DPH

FINE MECHANICS AND OPTICS

SCIENTIFIC-TECHNICAL JOURNAL
VOLUME 57 4/2012

CONTENTS

Modular metamorphic robotic systems and description of their kinematics (Z. Bobovský, F. Trebuňa)	99
The experimental and analytical solution of tensor stress field of fixed beam (P. Macura, F. Fojtík)	100
Presentation of the leading Czech manufacturer of small arms	105
GSM alarm device for cars	105
Assault rifle CZ 805 BREN	106
Aberration measurement based on intensity propagation equations (J. Novák, P. Novák, A. Mikš)	108
To the issue of magnetic fields in optical microscopy (E. Stránská, P. Novotný)	113
Book review of the first Czech translation of the Kepler's Dioptrics (J. Bajer)	116
Innovations from AMPER 2012 trade fair	117
Stanislav Kolník died (A. Štrba)	118
2012 new products from Meopta (V. Kohout)	120
Developing centre Infrared (F. Chlup, J. Oulehla)	122
Illumination of external fields (P. Horňák)	123
Radiant warming – an employment of optical radiometry methods (M. Miler)	125
Ing. Ladislav Slavkovský, the first editor in chief of JMO, died	127

For further information about the journal intention, instructions for authors, contents etc. please refer to <http://jmo.fzu.cz/>

Information on subscription rate and on ordering gives the SLO UP a FZÚ AV ČR, 17. listopadu 50, 772 07 Olomouc, tel.: 585 631 576, e-mail: eva.pelclova@upol.cz.

Price for single copy: 40 Kč incl. VAT

CONTENTS

Modular metamorphic robotic systems and description of their kinematics (Z. Bobovský, F. Trebuňa)..... 99

The experimental and analytical solution of tensor stress field of fixed beam (P. Macura, F. Fojtík) 100
The contribution is devoted to the comparison of experimental and analytical solution of tensor stress field of fixed beam. One result of experimental solution by means of optical photoelasticity method is to find courses of isochromatic lines, stated the principal stress differences. The second experimental result are the courses of isoclinic lines indicating the principal stress directions. The courses of isostatic lines we can find out by means of experimental brittle lacquer method. The tangents and normal lines to the isostatic lines indicate the principal stress directions. The objective of the submitted contribution is the analytical solution of the courses of isochromatic, isoclinic and isostatic lines and the comparison with the experimentally found lines. The comparisons were realized on the fixed beam, loaded by the concentrated force on his end.

Presentation of the leading Czech manufacturer of small arms..... 105

GSM alarm device for cars 105

Assault rifle CZ 805 BREN 106

Aberration measurement based on intensity propagation equations (J. Novák, P. Novák, A. Mikš)..... 108
The article is focused on the problem of aberration measurements on the basis of irradiance transport equation. Fundamental equations are described for the propagation of irradiance and these formulas are applied for phase retrieval using intensity measurements at different positions along the propagation direction. Mathematical techniques for solving the irradiance transport equation are presented. It is also shown the possibility of applications for the measurement of eye aberrations in optometry and ophthalmology.

Keywords: aberrometry, wave aberrations, irradiance transport equation, phase retrieval

To the issue of magnetic fields in optical microscopy (E. Stránská, P. Novotný)..... 113
The main objective of this work was to map size and direction of the magnetic field of the permanent magnet. We have used available

scientific literature and software. The accuracy of these methods was verified by the Hall's probe measurement. The optimal geometry of magnet inducing optical activity in a sample was also determined. Subject to examination was the axial magnetized cylindrical neodymium magnet with the cavity. The magnetic induction was determined in the axial direction along the axis of magnet.

Book review of the first Czech translation of the Kepler's Dioptrics (J. Bajer)..... 116

Innovations from AMPER 2012 trade fair 117

Stanislav Kolník died (A. Štrba)..... 118

2012 new products from Meopta(V. Kohout) 120
Meopta-optika, s.r.o., as a traditional Czech optical manufacturer markets its new models invited by armed forces, police or riflemen. Within next months we can expect really good product supply extended by selection of advanced successions of well-established models.

Developing centre Infrared (F. Chlup, J. Oulehla)..... 122

Illumination of external fields (P. Horňák) 123
In present days cities invest more and more money in the illumination of roads and architectonic objects, but a part of the town environment is also an illumination of their external fields. However the wrongly based illumination project can devalue the intended effect and the result is often a tasteless and incoherent mesh of various light sources. The aim of this article is to remind designers and all people engaged in the decision process that these projects have to satisfy not only all the functional requirements but also town environmental needs.

Radiant warming – an employment of optical radiometry methods (M. Miler)..... 125
This article investigates the ratio dependences of warming fully dressed persons gathered in groups by effect of linear clear thermal radiators placed above them. As a model example for the analysis we employed the Saint Wenceslas Church in Prague-Vršovice, from where this warming device has been in the meantime unfortunately removed. The detailed graphs illustrate the optimal configuration of oblique radiating in the transverse direction and suitable radiators composition in the longitudinal direction. Such adjustment can create warm comfort more economically.

Ing. Ladislav Slavkovský, the first editor in chief of FMO, died 127