

# JEMNÁ MECHANIKA A OPTIKA

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## **Benford's law in design of mechanical part of optical systems** (D. Jareš, Z. Rail)..... 131

This article analyses dimensions of mechanical parts of optical systems on the basis of Benford's law. Its main goal is to initiate the discussion, whether and in which way it would be possible to use this law in the designing.

**Keywords:** Benford's law

## **To the issue of magnetic fields in optical microscopy**

(E. Stránská, P. Novotný)..... 134

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.

## **3D optical scanners** (A. Mikš, P. Pokorný)..... 137

The paper gives an analysis of optical systems of one-mirror and two-mirror 3D optical scanners, a commercially available models are introduced, the derived relations allow to design both types of scanners in the general case, these relations are then demonstrated on actual examples.

## **Changes in cell structure after exposure of pulsed electric field**

(A. Yurov, A. Proshlyakov, J. Blahovec)..... 142

The influence of electric pulses on the growth of mould in samples of pistachio nuts (*Pistacia vera*) was studied. Two electric pulses with intensity of electric field of 1.6 kV/cm were generated by using the laboratory electrical pulse technique; duration of individual pulse was 10 ms and the pause between the pulses was 100 ms. The analysis was applied to three groups of samples (dry, wet, and

control group). Growth of mould was monitored by Microfocus X-ray source (Thermo Kevex X-Ray PXS5-927) with energy 45 keV and by an optical microscope Nikon Eclipse E600.

**Keywords:** electrical pulses, pulse electric field, permittivity, x-rays, mould

## **Orthoptics** (A. Rybníčková) ..... 146

This article discusses orthoptics – the discipline dealing with a correction of simple binocular vision of young children. It also studies orthoptical instruments used for examination of simple binocular vision, its diagnosis and treatment of abnormalities.

**Keywords:** orthoptics, binocular vision, synoptofor

## **Bedtime story: How I saved my Meopta** (P. Kořán) ..... 147

## **Zygo interferometers for precise measurement and metrology of not only optical surfaces – present products**

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## **Interference in the diffusion light** (J. Bartl)..... 152

Interference in the diffusion light (speckle interferometry) is an imaging technique using the laser light that makes possible to display and evaluate a motion of the object surface between two positions. It is being used in the laboratory practice. Sweeping of the frequency (e.g. by some few Hz) enables us to observe very fine object deformations. The amplitude of measured displacements spans from few micrometers up to hundreds micrometers.

**Keywords:** deformation analysis, stress analysis, optical measurement, speckle interferometry

## **Radiant warming – an employment of optical radiometry**

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