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## CONTENTS

**Computation of propagation properties in a laterally inhomogeneous stratified medium: underwater transmission**
**Angelos Amditis 1**

*Propagation of acoustic waves generated from a source within a laterally inhomogeneous layered sea medium is examined using analytical techniques. A two step analytical approach is employed. Starting from the computation of response function of the stratified medium, integral equation techniques are employed to analyze the case of inhomogeneous medium. The use of contour integration techniques allows the development of field expressions in terms of normal modes of the stratified sea medium with arbitrary number of layers. Field calculation is carried out for a sinusoidal lateral inhomogeneous sea medium. Numerical computations are carried out and the effects of inhomogeneites are examined.*

**Optoelectronic repeater – coupler – active device for fiber optic local area networks**
**Ethon Odysseus Narlis 21**

*An optoelectronic analog repeater – coupler circuit for fiber optic local area network applications is described. The device is suitable for interfacing the electronic circuits of subscriber equipment on the fiber without interrupting the physical layer and the real time connection of the other subscriber equipment. The circuit has the aspect of the conventional operational amplifiers, and the experimental results are close to the simulations assuring the validity of the design philosophy.*

**Auroral phenomena as seen by uvsips, imap-3, ska-3 experiments on board the interball-2 satellite**
**Kunyu I. Palazov, Alexander Z. Bochev, Stephan Chr. Spasov, Alexander K.Kuzmin, Natan A.Esmont, Faina K. Shuiskaya 33**

*The International Interball project investigates the system solar wind-magnetosphere by two satellites - Auroral and Tail probes. A set of experiments investigates the interactions energetic particles, magnetosphere, ionosphere. We present correlated results received by the optical instruments UV spectrometer UVSIPS, magnetometer IMAP-3 and SKA-3 (set of energetic particles detectors) on board the Auroral satellite, thus allowing to contribute substantially to the realization of the tasks and scientific aims of the Interball Project.*

*As a result of this combination of remote sensing and conjugate in-situ measurements, a new phenomenon was detected at the polar edge of the auroral oval - field-aligned upward electron beams at altitude $3R_E$, accompanied by bi-directional electron field aligned beams.*

**Automated system for studying man's physiological condition and adaptive capabilities under normal conditions and under physical overload**
**V.G.Kuzmin, I.Ya.Orlov, E.I.Shkelev, S.V.Kuznetsova, V.V.Lebedev 43**

*Spectral analysis with high time-and-frequency resolution based on the Wigner-Will transform is applied for the diagnosis of the of the state of man's heart by means of studying acoustic noises and rhythms of the heart. The main characteristics of the heart's state can be obtained by analysing the time distribution of heart rhythm on the basis of electrocardiography and acoustic signals and acoustic signals. The signal can be characterised as impulses having a delicate structure. Heart beats are acoustic signals that have a number of modes with frequency modulation. By decoding the delicate structure of such signals one can get additional information about the state of the heart. A high time-and-frequency resolution is required to achieve it. Traditional spectral analysis methods could not offer this type of resolution.*

**The total ozone over Bulgaria during the solar eclipse on 11 August 1999**
**Boyan H. Petkov, Tsvetana N. Gogosheva, Rolf Werner, Dimitar G. Krastev 51**

*The measurement of the total ozone amount during the solar eclipse on 11$^{th}$ August 1999 was performed by an ultraviolet spectrophotometer. The device measures the direct solar radiation in the range 300-360 nm at 1 nm spectral resolution. It was compared to a standard Brewer spectrophotometer. Approximately 15 minutes after the first contact, the ozone amount began to decrease till the maximum phase when it was 14% less than the value on the control day (10$^{th}$ August). After the maximum phase (96% coverage) the total ozone sharply increased and 35 minutes later it became 10% more than that on the control day. During the next 50 minutes the ozone amount reached a level, 6% higher than that on 10$^{th}$ August.*

**Noise stability of spread-spectrum communication systems**
**G.Chalikyan, M.Markosyan, G.Simonyan 61**

*The method of an information transmission by means of circular shift of a pseudo-random sequence is reviewed and the brought formulas and dependence curves of probability of an error depending on numbers of shifts and time of correlation in the receiver.*