

# PHYSICS OF VIBRATIONS

Volume 6, Number 1, 1998

## CONTENTS

### COHERENT TRANSIENT PHENOMENA

- Fluorescence Detected Coherent Phenomena on Single Triplet-State Molecules  
*S.Ya. Kilin, A.P. Nizovtsev, P.R. Berman, J. Wrachtrup, and C. von Borzyskowski*..... 1
- Spectral Markers and Detection of Slow Molecules by Photon Echo and Its Modifications  
*L.S. Vasilenko, N.N. Rubtsova, and E.B. Khvorostov*..... 12

### NONLINEAR OPTICS OF ATOMIC GASES

- Nonlinear Optics at Maximum Coherence  
*A.V. Sokolov, G.Y. Yin, and S.E. Harris*..... 18
- Control of Photoionization Processes through Quantum Interference  
*S. Cavalieri, R. Eramo, L. Fini, and M. Materazzi*..... 27

### QUANTUM INTERFERENCE PHENOMENA

- Diffusion and Tunneling of an Atomic Wavepacket in the Optical Lattice  
*G. Nienhuis and P.M. Visser*..... 34
- Radiative Transfer of Optical Coherence  
*S.G. Rautian*..... 42
- Interference at Quantum Transitions: Lasing without Inversion and Resonant Four-Wave Mixing  
in Strong Fields at Doppler-Broadened Transitions  
*A.K. Popov*..... 50

### NONLINEAR PHENOMENA IN PLASMA}

- Laser Cooling and Wigner Crystallization of Rarefied Plasma  
*A.P. Gavriluk, I.V. Krasnov, and N.Ya. Shaparev*..... 67

### NONLINEAR OPTICAL PHENOMENA IN SOLIDS}

- Spatiotemporal Transient Phenomena under Coherent Excitation of Quantum Systems in Anisotropic Crystals  
*E.F. Martynovich, E.E. Martynovich, and S.I. Polityko*..... 75
- New Methods of  $n_2$  Measurement Based on Dispersion Interferometry with Application to KTP Crystals  
and Silver Colloidal Solutions  
*V.P. Drachev, S.V. Perminov, and V.P. Safonov*..... 81
- Light Pulse Evolution at the Exact Phase-Matched Type-II Cascade in KTP  
*A.V. Gorchakov, A.L. Belostotsky, V.K. Sapozhnikov, and A.B. Kaplun*..... 91