Proceedings of the
International Conference
“Days on Diffraction”

St. Petersburg, Russia
30 May – 2 June 2006
CONTENTS

Elena V. Aksenova, Evgeny V. Kryukov, Vadim P. Romanov
Light propagation in helicoidal media with large periodicity .............. 7

I. V. Andronov, D. Bouche
Geometrical degeneration of creeping waves on an anisotropic surface ....... 17

A. S. Blagovestchenskii, D. A. Fedorenko
Inverse problem of acoustic wave propagation in a structure with weak lateral
inhomogeneity .................................................. 25

Ya. L. Bogomolov, A. D. Yunakovskiy
Split-step Fourier method for nonlinear Schrödinger equation ............... 34

Victor V. Borisov
Some solutions to the wave equation in the case of temporal dependence of the
source-pulse velocity ............................................ 43

V. A. Borovikov
Flexural plane wave scattering by the thin elastic quarter plane in the case of
pinched boundary ............................................... 49

V. A. Borovikov
Nonstationary problem of thin elastic plate oscillations ..................... 64

Ya. A. Butko
Smolyanov surface measures and solutions of Schroedinger and heat type equa-
tions on a Riemannian manifold ................................... 74

V. V. Borzov, E. V. Damaskinsky
Coherent states of Krawtchouk oscillator and beyond .................... 85

V. G. Danilov, V. Yu. Rudnev
Confluence of free boundaries as a result of nonlinear waves interaction ...... 93

Gerald Kaiser
Extended wave propagators as pulsed-beam communication channels ........ 107

Andriy Kryvko, Valeri V. Kucherenko
Quantization conditions for the vector Sturm-Liouville problem .......... 117

Alexander V. Kudrin, Evgeny Yu. Petrov, Tatyana M. Zaboronkova
Eigenfunction expansions of source-excited electromagnetic fields in cylindri-
cally stratified unbounded gyrotrropic media ........................ 126

Victor G. Lapin
Scattering of electromagnetic impulse on the standing ion-acoustic wave forced
by the powerful electromagnetic wave in the liner plasma layer ............ 134

Vladimir Larichev, German Maximov
Propagation of the short pulse in medium with resonant relaxation .......... 139

L. M. Yuferova, Yu. A. Lavrov
Natural oscillations of a rectangular acoustic volume with elastic walls .... 146

†The presenting author is given in bold
P. N. Kot, L. M. Yufereva, **Yu. A. Lavrov**  
Influence of extensional movements of face elastic walls on free oscillations of a cylindrical acoustic resonator ........................................151

Elena I. Logacheva, **Vladimir S. Makin**, Vladimir V. Trubaev, Peter Kohns  
Negative dispersion cylindrical surface plasmon-polaritons in layered media .154

R.S. Makin  
On the Nonlinear Spectral Problem ........................................... 161

**Vladimir S. Makin**, Yuri I. Pestov, Peter Kohns  
Temperature dependence of surface electromagnetic wave attenuation for nickel 167

German A. Maksimov  
On the variational principle in dissipative hydrodynamics ............... 173

Michael Melgaard  
Strong asymptotic completeness for quantum wires ........................... 178

A. Esquivel, **A. E. Merzon**  
Nonstationary scattering DN-problem of a plane wave by a wedge .......... 187

D. Mitrovic  
Singularity formation for a pressureless gas dynamics system of conservation laws ................................................................. 197

**Maria V. Perel**, Mikhail S. Sidorenko  
Wavelet analysis for the solutions of the wave equation .................... 208

L.V. Gortinskaya, A.E. Kurasov, N.A. Malina, I.Yu. Popov, **E.S. Tesovskaya**, S.B. Levin  
Many particles problems for quantum layers .................................. 218

Mikhail M. Popov, Nikolay M. Semtchenok, Petr M. Popov, Arie R. Verdel  
Gaussian beam migration of multi-valued zero-offset data .................. 225

**A.V. Porubov**, D. Bouche, G. Bonnauad  
Use of asymptotic solutions of differential approximations for improvement of the schemes .......................................................... 235

A. B. Plachenov, V. N. Kudashov, **A. M. Radin**  
An analytical way of the fundamental cavity mode construction .......... 243

**Philippe Pouliguen**, J. F. Damien, Régis Hemon, Joseph Saillard  
RCS computation in near field ....................................................... 252

V. M. Shelkovich  
Validity and naturalness of definitions of δ- and δ'-shock type solutions to systems of conservation laws ............................................. 266

Irina I. Simonenko  
Transient waves produced by a periodically expanding sphere ....... 280

Dmitry S. Smirnov, **Vladimir S. Makin**, Peter Kohns  
Negative dispersion cylindrical surface plasmon-polaritons in spatially inhomogeneous dielectric permittivity media .......................... 286
J. Gough, V. A. Belavkin, O. G. Smolyanov
Hamilton-Jacobi-Bellman equations for quantum optimal control ........... 293

Hervé Stève, Damien Laval, Frédéric Molinet, Stéphane Tort
Diffraction by a strongly elongated object illuminated by an electromagnetic
plane wave propagating in the paraxial direction – application to a prolate
ellipsoid ........................................... 298

Vladimir S. Trubäev, Elena I. Logacheva, Vladimir S. Makin
The fields generated by finite grating coupler in conditions of SEW excitation 306

Andrei B. Utkin
Electromagnetic waves generated by line exponentially decaying current pulses 314

N. F. Yashina, T. M. Zaboronkova
Parametric instability of electromagnetic surface waves guided by the isotropic
plasma slab – chiral medium boundary ........................................... 322

Author index ................................................................. 327