# Program of the XIIth International Workshop on High Energy Physics and Quantum Field Theory

**Samara, Russia, 4-10 September 1997**

## September 4

PLENARY SESSION ( Chairman V.Savrin)

9.00 **Opening**
9.30 **Vladimir Sirotenko** (FNAL)
Search for leptoquark production at D0.
10.30 **Yoshimasa Kurihara** (KEK)
A status of the JLC project.
12.00 **Takayuki Saeki** (CERN)
W physics in $e^+e^-$ collisions at $\sqrt{s} = 161$ and 172 GeV at LEP.
12.40 **Igor Volobuev** (INP MSU)
Cosmological solutions with gauge and spinor fields.

PARALLEL SESSION A ( Chairpersons: F.Tkachov and Y.Kurihara)

15.30 **Vladimir Andrianov** (St.Petersburg State University)
Composite two Higgs models with FCNC suppression.
16.00 **Boris Arbuzov** (IHEP, Protvino)
$Z \to b\bar{b}$ probability and asymmetry in a model of
dynamical electroweak symmetry breaking.
16.30 **Yury Pirogov** (IHEP, Protvino)
Studying lepton flavour violation at electron and muon colliders.
16.50 **Nikolai Romanenko** (St.Petersburg State University)
On the phenomenology of Z' coupling only to 3 generation fermions.
17.40 **Per Osland** (University of Bergen)
Event orientation in $e^+e^-$ annihilations.
18.10 **Ilya Ginzburg** (Novosibirsk State University)
Multiphoton processes in collisions of high energy heavy nuclei.
18.30 **Valery Serbo** (Novosibirsk State University)
Production of muonium at relativistic heavy ion colliders.
18.40 **Valery Serbo** (Novosibirsk University)
A polarized laser beam as an anisotropic crystal for
high energy photons and electrons.

PARALLEL SESSION B ( Chairpersons: A.Shirokov and I.Volobuev)

15.30 **Derek Pursey** (Iowa State University)
S-matrix poles and unusual resonance phenomena.
16.00 **Alexander Krutov** (Samara State University)
Instant-form approach to two-body systems.
16.30 **Alexander Biryukov** (Samara State University)
Influence functional in quantum field theory.
16.50 **Andrey Arkhipov** (IHEP, Protvino)
On the $p\bar{p}$ single diffraction dissociation at high energy.
17.40 **Thomas Weber** (Iowa State University)
Levinson's theorem and bound states in the continuum.
18.10 **Sergey Vernov** (INP MSU, Moscow)
Construction of periodic solutions for nonlinear wave equation in $\phi^4$ theory.

PARALLEL SESSION C ( Chairman D.Slavnov)

15.30 **Vitaly Samartsev** (PhTI, Kazan)
Modern problems of quantum theory of interaction between electromagnetic field and matter.

16.00 **Eugene Bashkirov** (Samara State University)
Decoupling of time atomic correlators in quantum theory of superradiance.

16.30 **Edward Timoshenko** (University College, Dublin)
Equilibrium phenomena and kinetics of phase transitions in systems of long heterogeneous chains.

17.40 **Vitaly Samartsev** (PhTI, Kazan)
Optical superradiance and its application.

## September 5

PLENARY SESSION ( Chairman E.Boos)

9.30 **Boris Levtchenko** (INP MSU, Moscow)
Structure function measurements at HERA.

10.30 **Frank Lehner** (DESY)
High $Q^2$ results and searches for new physics at HERA.

12.00 **Sung Park** (Korea University)
Heavy flavour and finial state interaction at HERA.

13.00 **Ana Henriques** (CERN)
ATLAS detector status.

PARALLEL SESSION A ( Chairpersons: I.Ginzburg and V.Vanyashin)

18.10 **Alexander Ilyichev** (NSECPHE, Minsk)
Model independent radiative correction to deep inelastic
scattering for future polarization experiments at collider.

18.30 **Anatolyi Grashin** (MEPhI, Moscow)
Precise analysis of the HERA data on deep inelastic scattering.

20.00 **Rudolf Faustov** (SCC RAS, Moscow)
Two-body nonleptonic decays of B mesons.

20.30 **Nickolay Nikitin** (INP MSU, Moscow)
Physics of rare semileptonic B-decays.

21.00 **Vladimir Saleev** (Samara State University)
Spin effects in heavy quark fragmentation into baryons.

PARALLEL SESSION B ( Chairpersons: V.Troitsky and A.Gorokhov)

18.20 **Yuri Kubyshin** (INP MSU, Moscow)
Study of Wilson loop functionals in 2D quantum Yang-Mills theories.

18.40 **Vladimir Soloviev** (IHEP, Protvino)
Free boundary algebra in Ashtekar formalism.

20.00 **Anatoly Koshkarov** (Petrozavodsk State University)
Dual symmetry in gravitation.

20.20 **Fangil Gareev** (JINR, Dubna)
Hadron structure.

20.40 **Boris Danilyuk** (Samara State University)
Renormalization scheme for quantum field models with a local four-fermion interaction.

21.00 **Elena Rogacheva** (Samara State University)
Quantum chaos in optical models.

PARALLEL SESSION C ( Chairman B.Arbuzov)

18.30 **Alexander Biryukov** (Samara State University)
The importance of quantum field theory and high energy physics courses in universities.

20.00 **Derek Pursey** (Iowa State University)
"Physics for poets" - Teaching physics to non-scientists.

20.30 **Ilya Ginzburg** (Novosibirsk State University)
Some reserves in the course of quantum mechanics.

20.50 **Igor Guralnik** (Samara State University)
Virtual laboratory in teaching classical and quantum mechanics.

## September 6

PLENARY SESSION ( Chairman M. Boehm)

9.30 **Alexei Droutskoi** (ITEP, Moscow)
Diffraction at HERA.

10.30 **Saul Gonzalez** (CERN)
Physics prospects with the ATLAS detector at the LHC.

12.00 **Viacheslav Ilyin** (INP MSU, Moscow)
LHC: search for light Higgs boson with high $p_t$ at low luminosity.

12.40 **Ilya Ginzburg** (Novosibirsk University)
Key points of physical program for the first photon collider and the possible $\mu p$ collider.

PARALLEL SESSION A ( Chairman V.Andrianov )

15.50 **Valeri Smirichinski** (JINR, Dubna)
Conformal symmetry and Higgs efect in quantum cosmology.

16.10 **Dmitry Shirkov** (JINR, Dubna)
Analytic QCD running coupling with the finite infrared behaviour.

16.30 **Aleksey Alekseev** (IHEP, Protvino)
QCD running coupling: freezing versus enhancement in infrared region.

16.50 **Alexander Biryukov** (Samara State University)
Influence functional for the description of quantum electromagnetic field and excitons interaction.

PARALLEL SESSION B ( Chairman P.Osland )

15.30 **Masato Jimbo** (Tokyo Management College)
GRACE-SUSY: an automatic calculation for SUSY processes.

16.00 **Jochem Fleischer** (University of Bielefeld)
Methods to calculate scalar vertex diagrams.

16.20 **Mikhail Tentyukov** (JINR, Dubna)
A system for automating Feynman diagram calculation.

16.40 **Andrei Davydychev** (INP MSU, Moscow)
A geometrical angle on Feynman integrals.

17.00 **Natalia Ussyukina** (INP MSU, Moscow)
Calculation of two-loop massless four-point function.

PARALLEL SESSION C ( Chairman V.Samartsev )

15.30 **Vladimir Volostnikov** (Branch of Lebedev Inst., Samara)
Optics and quantum mechanics: new analogies.

15.50. **Helen Sapova** (PIIRS, Samara)
Quantum effects in interaction of electromagnetic field and liquid-crystall films.
16.10 **Igor Guralnik** (Samara State University)
Traps space recharge waves in non-linear accoustoelectronics and dynamic holography.
16.30 **Eugene Dorodnov** (PIIRS, Samara)
Thermofield dynamics of interaction between coherent radiation and Jan-Teller centers.
16.50 **Konstantin Gridnev** (St. Petersburg University)
Nonlinear Schroedinger equation and quantum information.

## PLENARY SESSION dedicated to Nikita Sveshnikov

Chairman D.Shirkov

17.40 **Opening**
17.50 **Andrey Shirokov** (INP MSU, Moscow)
Electric dipole in magnetic field: classical analogue of
quantum BSEC and its quantization.
18.20 **Edward Timoshenko** (University College, Dublin)
Boundary effects and confinement in gauge field theories.
18.40 **Edward Boos** (INP MSU, Moscow)
Unstable particles in gauge theories.
19.00 **Alexander Kamenshichik** (ITP RAS, Moscow)
Classicalization of quantum universe and quark confinement.
19.20 **Polina Cherzor** (Moscow State University)
Jet observables and energy-momentum tensor.
19.30 **Svetlana Gadalina** (Moscow State University)
Infrared structure of the energy-energy correlator for $e^+e^- \to$ hadrons.
19.40 **Fyodor Tkachov** (INR RAS, Moscow)
Status of the theory of jet observables.

# September 8

PLENARY SESSION ( Chairman D.Pursey )

9.30 **Edward Boos** (INP MSU, Moscow)
Collider physics results computed with ComHEP.
10.30 **Ehud Duchovni** (Weismann Institute, Tel-Aviv)
Search for SUSY particles at LEP-2.
12.00 **Fyodor Tkachov** (INR RAS, Moscow)
Towards systematic near threshold calculations in perturbative QFT.

PARALLEL SESSION A ( Chairpersons: J.Fleisher and Ya.Azimov)

15.30 **Jochen Biebel** (DESY-IfH, Zeuthen)
Four-fermion production with anomalous couplings at LEP-2 and NLC.
16.00 **Eduard Boos** (INP MSU, Moscow)
Four fermion reactions at photon linear colliders.
16.30 **Yoshimasa Kurihara** (KEK)
Six fermion production processes for top-physics.
16.50 **Mikhail Dubinin** (INP MSU, Moscow)
Higgs boson signal at LHC in the reaction $pp \to \gamma\gamma +$ leptons.
17.40 **Ilya Ginzburg** (Novosibirsk University)
Higgs boson with mass of 140-190 GeV at photon collider.
18.00 **Martin Sachwitz** (DESY-IfH, Zeuthen)
Higgs boson in $WW^*$ decay mode at linear collider.

## September 8

PARALLEL SESSION B ( Chairpersons: Yu.Kubyshin and V.Tarasov)

15.30 **Alexander Gorokhov** (Samara State University)
Path integral for Dicke-like models using the
Hubbard-Stratonovich approach.
16.00 **Victor Mikhailov** (Samara State University)
Quantum relaxation of N-level systems.
16.20 **Vyacheslav Ruchkov** (SSPU, Togliatti)
Quantum chaos in two-level systems with radiational decay.
16.40 **Vasily Tarasov** (INP MSU, Moscow)
Quantum non-hamiltonian systems and Lindblad theory.
17.40 **Vladimir Reshetov** (SSPU, Togliatti)
Janes-Cummings models with degenerate atomic levels.
18.00 **Sergey Troitsky** (INR RAS, Moscow)
Dynamical supersymmetry breaking and gauge mediation.
18.20 **Dmitry Gorbunov** (Moscow State University)
Flavor physics in gauge mediated SUSY breaking.
18.30 **Sergey Dubovsky** (Moscow State University)
Dynamical SUSY breaking and unification of couplings.
18.40 **Dondsu Bak** (University of Seoul)
Dynamics of BPS monopoles and dyons.

PARALLEL SESSION C ( Chairman E.Kogan)

15.30 **Thomas Weber** (Iowa State University)
Physics education in Iowa.
16.20 **Dmitry Slavnov** (Moscow State University)
Various interpretations of quantum mechanics.
16.50 **Alexander Krutov** (Samara State University)
Relativistic invariance principle in the course of physics.
17.40 **Dmitry Shirkov** (JINR, Dubna)
Quantum regularities around us.
18.20 **Vladimir Saleev** (Samara State University)
Computer mathematics for physicists.
18.40 **Alexander Tarnovsky** (SSPU, Samara)
On the definition of the state in quantum theory.

## September 9

PLENARY SESSION ( Chairman V.Sirotenko)

9.30 **Elisabeth Falk** (University of Lund)
Selected electroweak results from the LEP experiments.
10.30 **Chris Booth** (University of Sheffield)
Results from the ALEPH experiment at LEP-2.
12.00 **Shinhong Kim** (University of Tsukuba)
Recent CDF results on top quark physics and B physics.
13.00 **Leonid Chekhov** (Steklov Math. Inst., Moscow)
Quantum moduli spaces.

## PARALLEL SESSION A ( Chairpersons: A. Davydychev and R.Faustov)

15.30 **Yakov Azimov** (PNPI, St. Petersburg)
Double flavor oscillations and properties of heavy mesons.

16.00 **Mikhail Dolgopolov** (Samara State University)
Radiative and relativistic corrections to interactions between $\pi$-mesons.

16.30 **Lev Molchatsky** (SSPU, Samara)
Relation between mass splittings in the isomultiplets of the baryon octet.

16.50 **Vitaly Beilin** (Rostov State University)
Radiative decays of mesons in the extended model with heavy singlet quark.

17.40 **Alexei Martynenko** (Samara State University)
Correction of order $O(\alpha^6)$ to muomium fine structure induced by the three-photon exchange diagrams.

18.00 **Alexander Zubarev** (SSAU, Samara)
Parquet approximation in large N matrix theories.

## PARALLEL SESSION B ( Chairpersons: T.Weber and M.Sachwitz)

15.30 **Alexander Vshivtsev** (MIREA, Moscow)
Algebraic approach to the spectral problem for Schroedinger equation.

15.50 **Victor Edneral** (INP MSU, Moscow)
On standard bases over Newton's polytopes.

16.10 **Vladimir Vanyashin** (Dniepropetrovsk State University)
Unified variational treatment of Coulombic attraction and repulsion.

16.30 **Ivan Lukashevich** (RUND, Moscow)
Precise analysis of data on electromagnetic structure of nucleon.

17.40 **Manfred Boehm** (Institute for Theor Phys., Wuerzburg)
Two-loop contributions to $\mu$-decay.

18.10 **Anna Stepanova** (Moscow State University)
An algebraic algorithm for NLO calculations in the large s (small x) regime.

## PARALLEL SESSION C ( Chairman A.Krutov)

15.30 **Alexander Biryukov** (Samara State University)
Educational process in the advanced physics school and
teaching basics of quantum physics and high energy physics.

16.00 **Alexander Gorokhov** (Samara State University)
Chaos and quantum theory.

16.20 **Mikhail Dolgopolov** (Samara State University)
Teaching renormalization group method in the advanced physics school.

16.40 **Andrey Shirokov** (INP MSU and Kolmogorov college MSU, Moscow)
Quantum mechanics for scholars.

17.40 **Dmitry Slavnov** (Moscow State University)
Einstein-Podolsky-Rosen paradox and Bell nonequality.

18.00 **Yuri Popov** (INP MSU, Moscow)
Methodological problems in the quantum mechanics of charged particles.

18.20 **Alexander Tarnovsky** (SSPU, Samara)
Angular momentum in quantum mechanics and in Bohr quantum theory.

## September 10

PLENARY SESSION ( Chairman A.Biryukov)

9.30 **Mikhail Dubinin** (INP MSU, Moscow)
Workshop summary: high energy physics.
10.00 **Yuri Kubyshin** (INP MSU, Moscow)
Workshop summary: quantum field theory.
10.30 **Closing.**