

# QUARKS-2006

14th International Seminar on High Energy Physics  
Pepino, St. Petersburg, Russia, May 19 — 25, 2006.

## Preliminary Program

Moscow, 2006

# Friday, May 19

## Morning: Registration

## Plenary Session. 14:00

1. *Opening* — 15 min.
2. Tavkhelidze, A. (INR RAS, Moscow)  
*The quantum number color, colored quarks and QCD  
(dedicated to the 40th anniversary of quantum number  
color)* — 45 min.
3. Shirkov, D. (JINR, Dubna)  
*QCD at low energies* — 30 min.
4. Csaki, C. (Cornell U.)  
*The super-little Higgs* — 30 min.

## Coffee Break. 16:00 – 16:30

5. Yung, A. (NPI, St. Petersburg)  
*Bulk brane duality in field theory* — 30 min.
6. Arefeva, I. (Steklov Mathematical Institute, Moscow)  
*Superstrings and models of cosmological dark energy* — 30 min.
7. Starobinsky, A. (Landau Inst.)  
*Dark energy models in scalar-tensor and  $f(R)$  gravity* — 30 min.

## Coffee Break. 18:00 – 18:30

8. Grojean, C. (Saclay)  
*EW phase transition and production of gravitational  
waves* — 30 min.
9. Mukohyama, S. (Tokyo U.)  
*Gravity in a Higgs phase* — 30 min.

# Saturday, May 20

## Morning Sessions.

### Parallel Section #1. 10:00

1. Piette, B. (Durham U.)  
*Mass term in the Skyrme model* — 25 min.
2. Shunderyuk, A. (INR, Moscow)  
*Pentaquarks as chiral solitons and as multiquark states* — 25 min.
3. Krusch, S. (Kent U.)  
*Quantization of skyrmions* — 25 min.
4. Kuraev, E. (JINR, Dubna)  
*Some application of reggeon lagrangian. Muon production and triple muon vertices* — 20 min.

### Coffee Break. 11:40 – 12:00

5. Vysotsky, M. (ITEP, Moscow)  
 *$B \rightarrow \rho \pi \pi$  decays: branching ratios and CP asymmetries* — 25 min.
6. Faustov, R. (Computing Ctr., Moscow)  
*Masses of heavy tetraquarks in the relativistic quark model* — 25 min.
7. Shevchenko, V. (ITEP, Moscow)  
*Selected applications of covariant perturbation theory to B-physics* — 25 min.
8. Efimov, G. (JINR, Dubna)  
*Meson spectrum in QCD with analytic confinement* — 25 min.

### Parallel Section #2. 10:00

1. Koyama, K. (Portsmouth U.)  
*Modified gravity models alternative to dark energy* — 30 min.

2. Dubovsky, S. (Harvard U. & INR, Moscow)  
*Superluminal propagation and constraint on effective field theories* — 30 min.

3. Rubakov V. (INR, Moscow)  
*Phantom without UV pathologies* — 30 min.

Coffee Break. 11:30 – 12:00

4. Tanaka, T. (Kyoto U.)  
*Ghost in the accelerating universe* — 30 min.

5. Tynyakov, P. (Brussels U. & INR, Moscow)  
*Phenomenological implications of massive gravity* — 30 min.

6. Vikman, A. (Munich U.)  
*Escaping from the black hole?* — 30 min.

7. Volovich, I. (Steklov Math. Inst., Moscow)  
*Finite action Klein-Gordon solutions and cosmological landscape* — 30 min.

### Parallel Section #3. 10:00

1. Vasiliev, M. (Lebedev Inst., Moscow)  
*New results in higher spin gauge theory* — 30 min.

2. Isaev, A. (JINR, Dubna)  
*Multi-loop feynman integrals and conformal quantum mechanics* — 25 min.

3. Vernov, Yu. (INR, Moscow)  
*Haag's Theorem in  $SO(1,3)$  and  $SO(1,1)$  invariant theories* — 25 min.

4. Fursaev, D. (JINR, Dubna)  
*Entanglement entropy in critical phenomena and quantum gravity* — 25 min.

Coffee Break. 11:45 – 12:00

5. Losev, A. (ITEP, Moscow)  
*BV master equations in modern quantum field theory* — 30 min.

6. Krotov, D. (INR, Moscow)  
*Gauge theory as a singularity in Chern-Simons* — 30 min.
7. Belavin, A. (Landau Inst.)  
*Veneziano amplitudes in minimal Polyakov string theory* — 45 min.

## Plenary Session. 15:00

1. Hearty, C. (BABAR Collaboration)  
*Recent highlights from BaBar* — 30 min.
2. Aushev, T. (ITEP, Moscow)  
*Recent results from Belle experiment* — 30 min.
3. Nir, Y. (Weizmann Inst.)  
*Highlights of B factories* — 30 min.
4. Wetterich, C. (Heidelberg U.)  
*Chiral freedom and the scale of weak interactions* — 30 min.

## Coffee Break. 17:30 – 18:00

5. Kazakov, D. (JINR, Dubna)  
*The supersymmetric interpretation of the EGRET excess of diffuse Galactic gamma rays* — 30 min.
6. Nesvizhevsky, V. (ILL, Grenoble)  
*Short overview of current experiments with slow neutrons at the ILL, Grenoble* — 30 min.
7. Achasov, N. (Sobolev Inst. Math., Novosibirsk)  
*Properties of the light scalar mesons face experimental data* — 30 min.
8. Lipatov, L. (NPI, St. Petersburg)  
*Anomalous dimensions of twist-2 operators and Pomeron in the  $N = 4$  supersymmetric gauge theory* — 30 min.

Sunday, May 21

Visit to Peterghoff and Kronshtadt

# Monday, May 22

## Morning Sessions.

### Parallel Section #1. 10:00

1. Mueller-Preussker, M. (Humboldt U., Berlin)  
*Lattice QCD in the infrared: Landau gauge ghost and gluon propagators and the running coupling* — 30 min.
2. Rebbi, C. (Boston U.)  
*Hadron spectroscopy with overlap quarks* — 30 min.
3. Zakharov, V. (ITEP, Moscow)  
*Shrinking fermionic zero modes in Yang-Mills theories* — 30 min.

### Coffee Break. 11:30 – 12:00

4. Narodetskiy, I. (ITEP, Moscow)  
*Pentaquark and Lambda production in pp and Sigma p collisions at high energies* — 25 min.
5. Alekhin S. (IHEP, Serpukhov)  
*Isospin asymmetry of the sea parton distribution at small x and the value of Gottfried integral* — 25 min.
6. Saleev, V. (Samara State U.)  
*Heavy quarkonium production in Regge limit of QCD* — 25 min.
7. Ermolaev, B. (Ioffe Phys. Tech. Inst., St. Petersburg)  
*Total resummation of the leading logarithms of x vs standard approach for the polarized deep-inelastic scattering* — 25 min.

### Parallel Section #2. 10:00

1. Balev, S. (JINR, Dubna)  
*Search for direct CP-violation in  $K \rightarrow \pi\pi\pi\pi$  decays* — 30 min.
2. Bolotov, V. (INR, Moscow)  
*The study of rare decays with P-326 (CERN) experiment* — 30 min.

3. Duk, V. (INR, Moscow)  
*Rare kaon decays at ISTR A+ setup* — 30 min.

Coffee Break. 11:30 – 12:00

4. Polyarush, A. (INR, Moscow)  
*Study of  $K \rightarrow e - \pi - \nu - \gamma$  decay with ISTR A+* — 30 min.
5. Parkhomenko, A. (Yaroslavl State U.)  
 *$B \rightarrow (\rho, \omega)\gamma$  Decays and CKM Phenomenology* — 30 min.
6. Sidorova, M. (Moscow State U.)  
*Rare meson decays in R-parity-violating SUSY theories* — 30 min.

### Parallel Section #3. 10:00

1. Smilga, A. (SUBATECH, Nantes)  
*Superconformal higher-dimensional field theories and the Theory of Everything* — 30 min.
2. Nirov Kh. (INR, Moscow)  
*On conservation laws in integrable systems* — 25 min.
3. Spiridonov, V. (JINR, Dubna)  
*On particular solutions of the elliptic Calogero-Sutherland type models* — 25 min.

Coffee Break. 11:30 – 12:00

4. Bezrukov, F. (INR, Moscow)  
*One fermion creation in 1+1d theories* — 25 min.
5. Marshakov, A. (Lebedev Inst., Moscow)  
*Gauge-string duality and the origin for the Seiberg-Witten theory* — 30 min.
6. Samsonov, I. (Tomsk Polytechnic U.)  
*On renormalizability of non-anticommutative theories with  $N=(1,0)$  supersymmetry* — 25 min.
7. Kotikov, A. (JINR, Dubna)  
*Anomalous dimensions of the Wilson operators in  $N = 4$  SUSY Yang-Mills model* — 25 min.
8. Gorsky, A. (ITEP, Moscow)  
*From YM Lagrangian to MHV diagram technique* — 25 min.

## Evening Sessions.

### Parallel Section #1. 15:30

1. Ainutdinov, V. (INR, Moscow)  
*Baikal neutrino project* — 30 min.
2. Naumann, C. (Erlangen - Nuremberg U.)  
*Status of the ANTARES neutrino telescope* — 30 min.
3. Dokuchaev, V. (INR, Moscow)  
*Dark matter annihilation in the Galaxy* — 25 min.
4. Gvozdev, A. (Yaroslavl State U.)  
*Giant flare of a magnetar SGR 1806-20* — 25 min.
5. Zakharov, A (ITEP, Moscow)  
*Measuring the black hole parameters with space missions* — 30 min.

Coffee Break. 17:45 – 18:00

6. Eroshenko, Yu (INR, Moscow)  
*Dark matter distribution in Galaxy* — 25 min.
7. Fairbairn, M. (Stockholm U.)  
*The prospects for the indirect detection of dark matter* — 25 min.
8. Stokov, V. (MIPT & Lebedev Inst., Moscow)  
*Lagrangian formalism in the cosmological perturbation theory* — 25 min.

### Parallel Section #2. 15:30

1. Mauger, F. (LPC Caen/ENSICAEN & Univ. of Caen)  
*Neutrinoless double beta decay and the NEMO experiments* — 30 min.
2. Gladyshev, A. (JINR, Dubna)  
*Selected scenarios for slepton production at LHC* — 30 min.

3. Kim, V. (PNPI, Gatchina)  
*Diffraction Higgs production at LHC* — 30 min.
4. Nugaev, E. (INR, Moscow)  
*Higgs boson with single generation* — 30 min.

Coffee Break. 17:30 – 18:00

5. Kirsanov, M. (INR, Moscow)  
*Search for a heavy Majorana neutrino in CMS at LHC* — 30 min.
6. Pankov, A. (Gomel State Tech. U.)  
*Distinguishing new physics scenarios at ILC* — 25 min.
7. Akhmetzyanova, E. (Samara State U.)  
*Evidences of CP violation in the supersymmetric models at linear colliders* — 25 min.
8. Smirnov, A. (Yaroslavl U.)  
*On mass limits for leptoquarks from  $K_L^0 \rightarrow e^\mp \mu^\pm, B^0 \rightarrow l_i^+ l_j^-$  decays.* — 25 min.

### Parallel Section #3. 15:30

1. McKeon, D. (Western Ontario U.)  
*Using the renormalization group* — 30 min.
2. Marachevsky, V. (St. Petersburg State U.)  
*Attractive Casimir forces for perfectly conducting cavities and waveguides: recent results.* — 20 min.
3. Grigoriev, D. (NUIM, Maynooth)  
*Real-time dynamics of proton decay* — 25 min.
4. Vereshagin, V. (NPI, St. Petersburg)  
*Effective theories: aspects of renormalization* — 20 min.
5. Akhmedov, Emil (ITEP, Moscow)  
*On the alternative formulation of 2D field theory* — 25 min.

Coffee Break. 17:35 – 18:00

6. Abrikosov, A. (ITEP, Moscow)  
*Integral boundary conditions for the modified spectral bag* — 25 min.
7. Alexeev, S. (Sternberg Astron. Inst., Moscow State U.)  
*Black hole solutions in  $N > 4$  Gauss-Bonnet Gravity* — 25 min.
8. Zhuk, A. (Odessa State U.)  
*Conventional cosmology from multidimensional models* — 25 min.
9. Vernov, S. (SINP, Moscow State U.)  
*Crossing the cosmological constant barrier in string inspired models* — 25 min.

### **Evening: Concert**

## Tuesday, May 23

### Visit to St.Petersburg and Hermitage State Museum

#### Night sessions.

##### Parallel Section #1. 20:30

1. Metsaev, R. (Lebedev Inst., Moscow)  
*Light-cone formulation of conformal field theory adapted to AdS/CFT correspondence* — 30 min.
2. Grigoriev, M. (Lebedev Inst., Moscow)  
*Parent form for higher spin fields on AdS space* — 30 min.
3. Krykhtin, V. (Tomsk Polytechnic U.)  
*BRST approach to higher spin field theory* — 30 min.

##### Parallel Section #2. 20:30

1. Shinkevich, S. (Moscow State U.)  
*Relativistic theory of inverse beta-decay of polarized neutron in strong magnetic field* — 30 min.
2. Romyantsev, D. (Yaroslavl State U.)  
*Compton scattering in a strongly magnetized plasma* — 30 min.

##### Parallel Section #3. 20:30

1. Shnir, Ya. (Oldenburg U.)  
*Non-self dual axially symmetric caloron solutions of SU(2) Yang-Mills theory* — 30 min.
2. Khokonov, A. (Kabarda-Balkar State U., Nalchik)  
*Stochastical study of vacuum stability* — 30 min.

# Wednesday, May 24

## Morning Sessions.

### Parallel Section #1. 10:00

1. Novozhilov, V. and Novozhilov, Yu. (St. Petersburg State U.)  
*Color bosonization, chiral parametrization of gluonic field and low energy QCD action* — 30 min.
2. Popov, S. (Sternberg Astron. Inst., Moscow State U.)  
*Neutron star cooling constraints for color superconductivity in hybrid stars* — 25 min.
3. Cherednikov, I. (JINR, Dubna)  
*Instanton contributions to the Sivers function: single-spin asymmetries in SIDIS* — 25 min.
4. Paston, S. (St. Petersburg State U.)  
*QED(1+1) on the light front and implications for semiphenomenological methods in QCD(3+1)* — 25 min.

### Coffee Break. 11:40 – 12:00

5. Petti, R. (CERN & South Carolina U.)  
*Modeling electron and neutrino scattering: from high to low  $Q^2$*  — 30 min.
6. Kulagin, S. (INR, Moscow)  
*QCD, nuclear effects and the Weinberg angle in neutrino DIS.* — 25 min.
7. Sidorov, A. (JINR, Dubna)  
*The role of higher twist and positivity constraints in polarized DIS* — 25 min.
8. Lee, R. (BINP, Novosibirsk)  
*Two-loop vertex integrals in general kinematics* — 25 min.

### Parallel Section #2. 10:00

1. Buchmueller, W. (DESY)  
*The supersymmetric Standard Model from the heterotic string* — 30 min.
2. Bajc, B. (Stefan Inst., Ljubljana)  
*Realistic renormalizable  $SO(10)$*  — 30 min.
3. Nesti, F. (Aquila U.)  
*SUSY  $SO(10)$  for fermion masses and mixings* — 30 min.

Coffee Break. 11:30 – 12:00

4. Demidov, S. (INR, Moscow)  
*Nonminimal split supersymmetry* — 30 min.
5. Dolgoplov, M. (Samara State U.)  
*The physical basis and effective self-couplings of Higgs bosons in the CPX scenario* — 30 min.
6. Povarov, A. (Yaroslavl State U.)  
*Scalar leptoquark contributions into the magnetic moment of neutrino in the minimal model with the four-color symmetry.* — 30 min.

### Parallel Section #3. 10:00

1. Barvinsky, A. (Lebedev Inst., Moscow)  
*Creation from nothing revisited: some like it hot* — 30 min.
2. Baacke, J. (Dortmund U.)  
*Hybrid inflation* — 30 min.
3. Mikheeva, E (Lebedev Inst.)  
*Current constraints on inflation* — 30 min.

Coffee Break. 11:30 – 12:00

4. Mironov, A. (ITEP, Moscow)  
*Possibility of experimental realization of the TeV-scale gravity* — 30 min.
5. Nesterov, D. (Lebedev Inst., Moscow)  
*Quantum effective action in spacetimes with branes* — 30 min.

6. Singleton, D. (Fresno State U.)  
*Avoiding cosmological chaos with S-branes* — 30 min.
7. Pirogov, Yu. (IHEP, Serpukhov)  
*Violating the general covariance* — 30 min.

## Evening Sessions.

### Parallel Section #1. 15:30

1. Braun, M. (St. Petersburg State U.)  
*Nucleus-nucleus interaction in the perturbative QCD* — 30 min.
2. Kerbikov, B. (ITEP, Moscow)  
*Bose-Einstein crossover and Anderson transition in dense quark matter* — 30 min.
3. Gromov, N. (NPI, St. Petersburg)  
*Fermionic and bosonic determinants in QCD at finite temperature and relations among them* — 25 min.
4. Slizovskiy, S. (NPI, St. Petersburg)  
*Fermionic determinant of  $SU(N)$  caloron* — 25 min.
5. Novikov, V (ITEP, Moscow)  
*Quadrupolar contact terms and hyperfine structure in hadronic atoms* — 30 min.

Coffee Break. 17:35 – 18:00

6. Braguta, V. (IHEP, Serpukhov)  
*Double charmonium meson production in  $e+e-$  annihilation at energy 10.6 GeV* — 30 min.
7. Zayakin, A. (JINR, Dubna)  
*Analytic perturbation theory for practitioners and Upsilon decay* — 25 min.
8. Scherbakova, E. (JINR, Dubna)  
*Application of QCD structure function method to calculation of NLO corrections to Bhabha scattering* — 25 min.

### Parallel Section #2. 15:30

1. Studenikin, A. (Moscow State U.)  
*Neutrino in matter and external fields* — 30 min.

2. Kuznetsov, A. (Yaroslavl State U.)  
*Neutrino dispersion in external magnetic fields* — 25 min.
3. Mikheev, N. (Yaroslavl State U.)  
*Neutrino chirality flip in a supernova and the bound on the neutrino magnetic moment* — 25 min.
4. Rashba, T. (Max Planck Inst., Munich)  
*Probing non standard neutrino interactions with coherent scattering off nuclei* — 25 min.
5. Ognev, I. (Yaroslavl State U.)  
*Neutrino heating of a shock wave within magnetorotational model* — 25 min.

Coffee Break. 17:45 – 18:00

6. Jaeckel, J. (DESY)  
*Entropy growth and the equation of state of dark energy* — 30 min.
7. Andrianov, V. (St. Petersburg State U.)  
*Induced gravity and Universe generation on domain walls in five-dimensional space-time* — 30 min.
8. Sibiriyakov, S. (INR, Moscow)  
*Spontaneous breaking of Lorentz invariance, black holes and perpetuum mobile of the 2nd kind* — 30 min.
9. Smolyakov, M. (SINP, Moscow State U.)  
*A stabilized brane world in five-dimensional Brans-Dicke theory* — 25 min.

### Parallel Section #3. 15:30

1. Thomson, G. (Rutgers U.)  
*Results from the HiRes Experiment* — 30 min.
2. Shinozaki, K. (AGASA Collaboration)  
*Observation of UHECRs by AGASA* — 30 min.
3. Pravdin, M. (Cosmophys. Res. Inst., Yakutsk)  
*Properties of giant air showers and the problem of energy estimation of an initial particle* — 30 min.

4. Belov, K. (Utah U.)  
*Experimental measurement of the energy dissipation rate of primary particle in EAS.* — 25 min.

Coffee Break. 17:30 – 18:00

5. Rubtsov, G. (Moscow State U. & INR, Moscow)  
*Upper limit on the ultra-high-energy photon flux* — 25 min.
6. Kalashev, O. (INR, Moscow)  
*Photons and the origin of the highest energy cosmic rays* — 25 min.
7. Dedenko, L. (Moscow State U.)  
*Various approaches of energy estimation of giant air showers* — 25 min.
8. Tkachev, I. (INR, Moscow & CERN)  
*Quantifying expectations of UHECR - BL Lacs correlations* — 25 min.

**Conference Dinner**

# Thursday, May 25

## Plenary Session. 10:00

1. McLerran, L. (Brookhaven)  
*The high energy limit of QCD* — 30 min.
2. Diakonov, D. (NPI, St. Petersburg)  
*3,5,7... - quark wave functions in ordinary baryons and the narrow width of the exotic Theta+ baryon* — 30 min.
3. Gherghetta, T. (Minnesota U.)  
*Emergent 4D gravity* — 30 min.

## Coffee Break. 11:30 – 12:00

4. Pomarol, A. (Autonoma U., Barcelona)  
*Composite Higgs* — 30 min.
5. Lukash, V. (Lebedev Inst., Moscow)  
*Problems of cosmology* — 30 min.
6. Tomaras, T. (Crete U. & FORTH, Heraklion)  
*Brane-bulk energy exchange: A model with the present Universe as a global attractor* — 30 min.
7. Zheng, H. (MINOS Collaboration)  
*MINOS update* — 30 min.
8. Gorbunov, D. (INR, Moscow)  
*Studies of UHECRs: past, present and future* — 30 min.
9. *Closing*