



## PROGRAMME

of

### 19th International Symposium on Very High Energy Cosmic Ray Interactions – ISVHECRI 2016



The Symposium is carried out under the auspices of *the International Union of Pure and Applied Physics (IUPAP)*



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- ☞ *the Federal Agency for Scientific Organizations (FASO);*
- ☞ *the P.N. Lebedev Physical Institute of the Russian Academy of Sciences (LPI RAS);*
- ☞ *the Russian Foundation for Basic Research (RFBR).*



### Symposium topics:

- ☞ EAS results relevant to Particle Physics
- ☞ Accelerator results relevant to Cosmic Ray Physics
- ☞ Emulsion chamber & Hybrid experiment results
- ☞ LHC pp and Heavy Ion Physics
- ☞ Exotic phenomena, manifestation of a “New Physics” beyond the Standard Model
- ☞ Hadronic cross sections, multiparticle production & hadronic interaction models
- ☞ Space experiment data related to high energy interactions
- ☞ Matter-Antimatter asymmetry
- ☞ New EAS experimental installations
- ☞ High energy neutrino and muon fluxes
- ☞ High and super high energy cosmic rays, origin & observation

## PROGRAM

### Sunday, 21 August 2016

14:00 – 18:00 Registration of the participants at the lobby of the main building of the LPI (Leninsky prospekt, 53)

### Monday, 22 August 2016

- 09:00 – 10:00 Registration of the participants
- 10:00 – 10:20 Opening ceremony. Welcome addresses  
(speakers: **Nicolay Kolachevsky**, **Olga Ryazhskaya**)
- 10:20 – 12:50 **Ground-based cosmic ray and gamma-ray experiments (I)**
- 10:20 – 11:00 **Leonid Kuzmichev** for the TAIGA Collaboration.  
Tunka Advanced Instrument for cosmic rays and Gamma-ray Astronomy(TAIGA): status, results and perspectives. (40')
- 11:00 – 11:30 **Coffee break** (30')
- 11:30 – 12:10 **Masato Takita** for the ALPACA collaboration.  
The ALPACA Project. (40')
- 12:10 – 12:50 **Hans Dembinski** for the IceCube Collaboration.  
Investigating cosmic rays and air shower physics with IceCube/IceTop. (40')
- 12:50 – 14:00 **Lunch break** (70')
- 14:00 – 15:20 **Ground-based cosmic ray and gamma-ray experiments (II)**
- 14:00 – 14:40 **Thomas Gaisser**  
Astrophysical neutrinos and atmospheric leptons. (40')
- 14:40 – 15:20 **Eduardo de la Fuente**, Juan Carlos Diaz Velez, Alberto Hernandez Almada, for the HAWC Collaboration.  
Status and Results of the HAWC Gamma Ray Observatory in Mexico. (40')
- 15:20 – 17:30 **Cosmic rays and gamma-rays up to  $10^{18}$  eV (I)**
- 15:20 – 15:50 **Vladimir Ptuskin**  
Origin of Cosmic Rays: modern status. (30')
- 15:50 – 16:20 **Yakov Istomin**  
New look on the origin of cosmic rays. (30')
- 16:20 – 16:50 **Coffee break** (30')
- 16:50 – 17:10 **Lyubov G. Sveshnikova**, et al.  
The TAIGA experiment for gamma astronomy above 30 TeV and first results. (20')
- 17:10 – 17:30 **Anatoly D. Erlykin**, V. P. Pavlyuchenko, R. M. Martirosov, N. M. Nikolskaya.  
The search of the anisotropy of the primary cosmic radiation by the difference method. (20')
- 17:30 – 18:50 **Astroparticle physics of very high energies**
- 17:30 – 17:50 **Vera G. Sinitsyna**, V.Y. Sinitsyna.  
Origin of very high energy emission in galaxy Clusters. (20')

- 17:50 – 18:10 **Vera.Y. Sinitsyna**, Vera G. Sinitsyna.  
Particle acceleration in Binaries. (20')
- 18:10 – 18:30 **Alexander S. Lidvansky**  
Burst activity of the Crab Nebula and its pulsar at high and ultra-high energies. (20')
- 18:30 – 18:50 **Dmitry O. Chernyshov**, K.S. Cheng, V.A. Dogiel  
Fermi bubbles as sources of cosmic rays above 1 PeV. (20')
- 19:00 – 20:30 **Welcome reception** (1 h.30')

## Tuesday, 23 August 2016

- 09:00 – 13:00 **Cosmic ray and gamma-ray experiments**
- 09:00 – 09:40 **Daniele Martello** on behalf of Pierre Auger Collaboration.  
The Pierre Auger Observatory status and the AugerPrime upgrade program. (40')
- 09:40 – 10:20 **Alexey Yushkov** for the Pierre Auger Collaboration.  
Recent results from the PAO on the mass composition and hadronic interactions of the ultra-high energy cosmic rays. (40')
- 10:20 – 11:00 **G. Di Sciascio**  
ARGO-YBJ legacy to next generation wide field of view experiments. (40')
- 11:00 – 11:30 **Coffee break** (30')
- 11:30 – 12:10 **John Matthews** for the Telescope Array Collaboration.  
Highlights from the Telescope Array. (40')
- 12:10 – 12:50 **Lawrence Jones**.  
Connections between CRs and HEP. (40')
- 12:50 – 13:00 Free discussion (10')
- 13:00 – 14:00 **Lunch break** (60')
- 14:00 – 16:00 **Balloon and space borne experiments**
- 14:00 – 14:20 **Yury I. Stozhkov**, A.M. Galper for the PAMELA collaboration.  
International space experiment PAMELA: 10 years on the orbit, main results (20')
- 14:20 – 14:40 **Nikolay P. Topchiev** on behalf the GAMMA-400 collaboration.  
New stage in high-energy gamma-ray studying with GAMMA-400 after Fermi-LAT. (20')
- 14:40 – 15:00 **Hiroki Rokujo** for the GRAINE collaboration.  
GRAINE balloon experiment in 2015: Precise observation of cosmic gamma rays by high-resolution emulsion telescope. (20')
- 15:00 – 15:20 **Atsushi Iyono**, Shigeki Aoki, Saya Yamamoto et al., for the GRAINE collaboration.  
Cosmic Ray Nuclei detection in the balloon borne nuclear emulsion gamma ray telescope flight in Australia (GRAINE 2015). (20')

- 15:20 – 15:40 **Hiroki Rokujo**, H. Kawahara, R. Komatani, M. Morishita, T. Nakano, N. Otsuka, and M. Yoshimoto.  
Latest Nuclear Emulsion Technology: Production, Readout and Interaction Analysis. (20')
- 15:40 – 16:00 **Roman I. Raikin**, A.A. Lagutin, N.V. Volkov, A.G. Tyumentsev  
Particles spectra and mass composition in the ultra-high energy region in the framework of the Galactic origin of the cosmic rays (20')
- 16:00 – 16:30 *Coffee break* (30')
- 16:30 – 18:10 *New EAS experiments and techniques*
- 16:30 – 16:50 **Yuri Stenkin** on behalf of the PRISMA collaboration  
The PRISMA-LHAASO project: status and overview. (20')
- 16:50 – 17:10 **Egor A. Zadeba**, N.V. Ampilogov, N.S. Barbashina, A.G. Bogdanov, A.A. Borisov, D.V. Chernov, L.I. Dushkin, R.M. Fakhrutdinov, S.S. Khokhlov, R.P. Kokoulin, K.G. Kompaniets, A.S. Kozhin, V.V. Ovchinnikov, A.S. Ovechkin, **Anatoly A. Petrukhin**, V.A. Sel.  
New installation for inclined EAS investigations. (20')
- 17:10 – 17:30 **Dmitry M. Gromushkin**, M.B. Amelchakov, N.S. Barbashina, A.G. Bogdanov, D.S. Brovtsev, A. Chiavassa, N.E. Fomin, N.N. Kamlev, S.S. Khokhlov, R.P. Kokoulin, K.G. Kompaniets, V.Yu. Kutovoy, O.I. Likiy, G. Mannocchi, I.A. Shulzhenko.  
Scintillation array of the Experimental Complex NEVOD for EAS investigations. (20')
- 17:30 – 17:50 **Valery A. Kolosov**, A.A. Mikhailov.  
Search Cosmic Rays Sources of Ultrahigh Energy. (20')
- 17:50 – 18:10 **Igor S. Petrov**, S.P. Knurenko, and A. V. Sabourov.  
Search for Neutrino Generated Air Shower Candidates with Energy More than  $1 \cdot 10^{19}$  eV and Zenith Angle  $\theta \geq 60^\circ$ . (20')
- 18:10 – 19:00 *Poster session\*\** (50')
- 19:00 – 20:30 *Historical session dedicated to the founders of the ISVHECRI series. Public lecture on the history of ISVHECRI meetings.*  
(1 h.30')

### Wednesday, 24 August 2016

- 09:00 – 09:40 *Hadronic interaction models*
- 09:00 – 09:40 **Ralph Engel**, Anatoli Fedynitch, Thomas K. Gaisser, Felix Riehn, Todor Stanev.  
A new version of the hadronic interaction model Sibyll. (40')
- 09:40 – 13:00 *Accelerator measurements relevant to CR studies*
- 09:40 – 10:20 **Bruno Alessandro** on behalf of the ALICE Collaboration.  
Detection and analysis of atmospheric muons using the ALICE detector at the LHC. (40')

- 10:20 – 11:00 **Takashi Sako** for the LHCf collaboration.  
Results of the LHCf experiment and the forward measurements at LHC. (40')
- 11:00 – 11:30 **Coffee break** (30')
- 11:30 – 12:10 **Albert de Roeck** for the CMS collaboration.  
Recent CMS results. (40')
- 12:10 – 12:50 **Alexander Herve**.  
Recent hadron production measurements performed by the NA61/SHINE collaboration. (40')
- 12:50 – 13:00 Free discussion (10')
- 13:00 – 14:00 **Lunch break** (60')
- 14:00 – 16:00 **Accelerator measurements relevant to CR studies**
- 14:00 – 14:40 **James Pinfold** for the ATLAS Experiment  
ATLAS results relevant to High Energy Cosmic Ray physics. (40')
- 14:40 – 15:00 **Lev Kheyn**  
Forward energy pseudorapidity distribution with CMS. (20')
- 15:00 – 15:20 **Igor M. Dremin**  
Unusual behavior of cross sections of high energy protons. (20')
- 15:20 – 15:40 **I.A.Lebedev**, A.I.Fedosimova, P.B.Kharchevnikov,  
A.T.Temiraliev.  
Applying universality in development of cascade processes for study of high energy cosmic particles in space experiments.
- 15:40 – 16:00 **Takashi Sako**  
RHIC forward experiment to study  $\sqrt{s}$  dependence of forward particle production (20')
- 16:00 – 16:30 **Coffee break** (30')
- 16:30 – 18:10 **Radio detection of EAS. CR studies at Tien Shan Station**
- 16:30 – 17:10 **Dmitriy Kostunin** for the Tunka-Rex Collaboration.  
Latest results of the Tunka Radio Extension. (40')
- 17:10 – 17:30 **Igor M. Zheleznykh**, R.D. Dagkesamanskii, L.G. Dedenko,  
G.L. Dedenko.  
Detection of extremely high-energy cosmic rays and neutrinos by radio astronomical methods. (20')
- 17:30 – 17:50 **Ernar Tautayev**, E. Boos, A. Haungs, T. Sadykov, N. Salihov,  
A. Shepetov, V. Zhukov.  
Searching for EAS radio signals at Tien-Shan installation at an altitude of 3340 m a.s.l. (20')
- 17:50 – 18:10 **Dmitry Beznosko**, R.U. Beisembaev, E.A. Beisembaeva,  
O.D. Dalkarov, V.A. Ryabov, S.B. Shaulov, A.V. Stepanov,  
N.G. Vildanov, M.I. Vildanova, V.V. Zhukov, K.A. Baigarin,  
T.Kh. Sadykov.  
HORIZON-T experiment status. (20')
- 18:10 – 19:00 **Poster session\*\*** (50')
- 19:00 – 20:30 **Public lecture\*** (1 h.30')

## Thursday, 25 August 2016

08:00 – 19:00 **Time for Excursions.**

*The organizers propose two basic options:*

- *a bus tour to Dubna, Moscow region for those who wish to visit JINR;*
- *sightseeing excursions around Moscow with visiting Kremlin and other famous museums, which could be arranged on request by the STRADO LCC travel company.*

19:00 – 20:30 **Public lecture\*** (1 h.30')

## Friday, 26 August 2016

09:00 – 09:40 **Vladimir Ryabov**

Modern status of CR researches at the Tien Shan High Mountain Research Station. (40')

09:40 – 10:20 **James Pinfold** on behalf of the MoEDAL collaboration.

The MoEDAL Experiment at the LHC - Beyond the Standard Model. (40')

10:20 – 13:00 **Hadronic interaction models**

10:20 – 11:00 **Tanguy Pierog.**

Air Shower Development and Pion Interactions in the EPOS Model. (40')

11:00 – 11:30 **Coffee break** (30')

11:30 – 12:10 **Andreas Haungs** for the KASCADE-Grande Collaboration.

KASCADE-Grande: Composition studies in the view of the post-LHC hadronic interaction models. (40')

12:10 – 12:30 **J.N. Capdevielle, Z. Plebaniak, B. Szabelska, J. Szabelski.**

Multiple particle production up to  $\sqrt{s} = 13$  TeV with the MC generator GHOST. (20')

12:30 – 12:50 **Rauf Mukhamedshin**

FANSY 2.0: a Monte Carlo tool for "forward physics" interaction simulations. Cosmic ray coplanarity and LHC data. (20')

12:50 – 13:10 **Zbigniew Plebaniak, Tadeusz Wibig.**

Extrapolation of proton-proton cross section to Cosmic Ray Energies using Geometrical Model. (20')

13:10 – 14:10 **Lunch break** (60')

14:10 – 15:50 **EAS experiments and techniques**

14:10 – 14:50 **Vasily V. Prosin** for the TAIGA Collaboration

Cosmic Ray Energy Spectrum by the Data of the TAIGA-HiSCORE Array. (40')

14:50 – 15:10 **Lev V. Timofeev, A.A. Ivanov**

A method of observing Cherenkov light at Yakutsk EAS array (20')

15:10 – 15:30 R.U. Beisembaev, E.A. Beisembaeva, **Dmitry Beznosko,**

O.D. Dalkarov, V.A. Ryabov, S.B. Shaulov, A.V. Stepanov,

- N.G. Vildanov, M.I. Vildanova, V.V. Zhukov, K.A. Baigarin,  
T.X. Sadykov.  
EAS with unusual structure. (20')
- 15:30 – 15:50 **Sayed Saleh Abdel-Aziz**, M. H. M. Soleiman, A. Qamesh.  
Higgs Production Enhancement in P-P Collision Using Monte  
Carlo Techniques at  $\sqrt{s} = 13$  TeV. (20')
- 15:50 – 16:20 **Coffee break** (30')
- 16:20 – 18:00 **Hybrid experiments and exotics**
- 16:20 – 16:40 **Masanobu Tamada**, N.Inoue, A.Ohsawa, A.Misaki.  
Detection of high energy electromagnetic and hadron  
components of the air-shower core in the new hybrid experiments  
"Pamir XXI" and "HADRON-55". (20')
- 16:40 – 17:20 **Sunil Gupta**  
GRAPES-III: present-day status, recent results and perspectives.  
(40')
- 17:20 – 17:40 **Yuri Stenkin** on behalf of PRISMA collaboration.  
Exotic geophysical phenomena observed in enviromental neutron  
flux study using a net of EAS PRISMA detectors. (20')
- 17:40 – 18:00 **Alexander Borisov**, V.I. Galkin, R. Bakhromzod, V.V. Batraev,  
S. Latipova, A. Mukumov  
EAS primary particle parameter estimation with the complex  
Pamir-XXI detector array. (20')
- 18:20 – 22:00 **Boat trip along Moscow-river. Conference dinner on board**  
(*this event is not covered by the conference fee and needs an extra charge*).

## Saturday, 27 August 2016

- 09:00 – 11:50 **EAS experiments & Muons**
- 09:00 – 09:20 **Alexander S. Borisov**, V.S. Puchkov, G.P. Shoziyoev.  
Exotic events in cosmic ray experiments. (40')
- 09:40 – 10:00 **Oscar Saavedra S.M.**  
Observation of high Energy Cosmic Rays by very inclined muon bundles with NEVOV-DECOR experiment. (20')
- 10:00 – 10:20 **Rostislav P. Kokoulin**, N.S.Barbashina, A.G.Bogdanov, D.V.Chernov, L.I.Dushkin, S.S.Khokhlov, V.A.Khomyakov, V.V.Kindin, K.G.Kompaniets, G.Mannocchi, Anatoly A. Petrukhin, O.Saavedra, G.Trincherro, V.V.Shutenko, I.I.Yashin, E.A.Yurina.  
Measurements of the energy deposit of multi-muon events in the Cherenkov water calorimeter. (20')
- 10:20 – 10:40 **Leonid G. Dedenko, T.M. Roganova, G.F. Fedorova**  
The original estimates of energy of extensive air showers at superhigh energies. (20')
- 10:40 – 11:00 **Alexander S. Borisov**, V.G. Denisova, V.I. Galkin, Z.M. Guseva, E.A. Kanevskaya, M.G. Kogan, A.E., Morozov, R.A. Mukhamedshin, S.I. Nazarov, V.S. Puchkov, S.E. Pyatovsky, M.D. Smirnova, A.V. Vargasov.  
On the nature of the CR penetrating hadronic component. (20')
- 11:00 – 11:30 **Coffee break** (30')
- 11:30 – 11:50 **Leonid G. Dedenko**, A.V. Lukyashin, G.F. Fedorova, T.M. Roganova.  
Testing of the QGSJ 01 and QGSJII-04 models with the help of the atmospheric muons. (20')
- 11:50 – 13:00 **Hybrid experiments & Exotics.**
- 11:50 – 12:30 **Sergei B. Shaulov** et al.  
The study of EAS cores in the LPI. (40')
- 12:30 – 13:00 **Timur A. Dzhatdov**, E.V. Khalikov, A.P. Kircheva, A.A. Lukashin  
The VHE anomaly in blazar spectra and related phenomena. (30')
- 13:00 – 14:00 **Coffee break** (60')
- 14:00 – 17:00 **Final session with the summary of presentations.**
- 14:00 – 14:20 **Tanguy Pierog**  
Review of open issues in hadronic interactions. (20')
- 14:20 – 14:40 **Tomas Gaisser**  
Challenges for experimental studies of Cosmic Rays.
- 14:40 – 15:00 **Lawrence Jones**  
Requests of cosmic ray community to accelerator high energy physicists. Questions of accelerator people to cosmic ray experimentalists.
- 15:00 – 15:20 Speaker to be announced.  
Review of poster contributions.



15:20 – 15:30 **Closing ceremony.** (10')

\* Invited talks, oral presentations and public lectures are carried out in the Conference Hall of the LPI (main building, 3rd floor).

\*\* Poster sessions are conducted around the balustrade at the 2nd floor of the LPI main building and in the lobby of the Conference Hall (main building, 3rd floor).

## Poster Presentations

**1. N.M. Nesterova**

Inelastic proton-air cross section increase within energy range 0.2 TeV – 10 PeV according to TIEN SHAN experimental cosmic ray data as compared with various models.

**2. A.L. Shepetov, O.N. Kryakunova, N.M. Salikhov, V.G. Yanke**

The compact microcontroller based data acquisition system for the NM64 neutron supermonitor.

**3. V.G. Sinitsyna, M.S. Andreeva, K.A. Balygin, S.S. Borisov, I.A. Ivanov, A.M. Kirichenko, A.I. Klimov, I.P. Kozhukhova, R.M. Mirzafatikhov, N.I. Moseiko, I.E. Ostashev, A.I. Palamarchuk, V.Y. Sinitsyna, I.G. Volokh**  
Shell-type SNRs as sources of cosmic rays.

**4. V.G. Sinitsyna, M.S. Andreeva, K.A. Balygin, S.S. Borisov, I.A. Ivanov, A.M. Kirichenko, A.I. Klimov, I.P. Kozhukhova, R.M. Mirzafatikhov, N.I. Moseiko, I.E. Ostashev, A.I. Palamarchuk, V.Y. Sinitsyna, I.G. Volokh**  
Very high energy emission sources beyond the Galaxy.

**5. L.G. Tkachev, A.A. Grinyuk, L.A. Kuzmichev, E.B. Postnikov, L.G. Sveshnikova**

Primary gamma ray selection technique in the joint operation of the Imaging Atmospheric Cherenkov Telescope (IACT) and the wide angle Cherenkov detectors for the gamma-observatory TAIGA.

**6. A.Sh.M.Elshoukrofy, E.B. Postnikov, E.E. Korosteleva, L.G. Sveshnikova, H.A. Motaweh**

Parametric analysis of Cherenkov light LDF from EAS in the range 30 -10000 TeV for primary gamma rays and nuclei, ways of practical application.

**7. A.V. Uryson.**

Cosmic ray contribution in extragalactic gamma-ray emission at an energy 0.1 TeV.

**8. A.S. Borisov, Z.M. Guseva, V.G. Denisova, E.A. Kanevskaya, M.G. Kogan, A.E. Morozov, R.A. Mukhamedshin, V.S. Puchkov, S.E. Pyatovsky, S.B. Shaulov, G.P. Shoziyoev, M.D. Smirnova**

Gamma-families with halo: main characteristics and possibilities of their using for estimation of p+He fraction in the mass composition of cosmic rays at the energies  $10^{15} \div 10^{17}$  eV.

**9. Igor A. Lebedev, A.Sh. Gaitinov, E.A. Grushevskaya.**

Study on peculiarities of multiparticle production via event-by-event analysis in asymmetric nucleus-nucleus interactions. (20')

**10. Timofeev L.V., Ivanov A.A.**

Cherenkov telescope prototype

**11. Irina S. Zayarnaya, T.A. Irkhina**

The search of primary particle tracks in nucleon-nucleus interactions with energy  $\Sigma E_{\gamma} \geq 3$  TeV registered in stratospheric x-ray emulsion chambers (on data of RUNJOB experiment).

**12. G.P. Shoziyoev, Sh.P. Shoziyoev**

Fast "swarm of detectors" and their application in cosmic rays

13. **Sedrati Rafik, Attallah Reda.**  
Origin of primary cosmic ray electrons: dark matter or nearby sources ?
14. **Dmitry M. Gromushkin, N.V. Ampilogov, N.S. Barbashina, F.A. Bogdanov, R.P. Kokoulin, V.V. Ovchinnikov, A.A. Petrukhin, I.A. Shulzhenko, Yu.V. Stenkin, I.I. Yashin, K.O. Yurin.**  
The array for investigations of EAS neutron component.
15. **M.Yu. Kuznetsov, O.E. Kalashev**  
Constraints on heavy decaying dark matter from the high energy gamma-ray limits.
16. **R.I. Raikin, T.L. Serebryakova, A.A. Lagutin, N.V. Volkov**  
Model-stable universality of the air shower electromagnetic component: an approach to solving the mass composition problem.
17. **V.A. Kolosov, A.A. Mikhailov**  
Search of the Dark Matter by Yakutsk array data.
18. **A.P. Chubenko, A.L. Shepetov, O.N. Kryakunova, V.A. Ryabov, T.Kh. Sadykov, L.I. Vildanova, V.V. Zhukov**  
The underground neutron events at Tien Shan: observational status at the year 2016.
19. **D. Beznosko, A. Iakovlev, A. Batyrkhanov, K. Yelshibekov**  
Large-area detector development using liquid scintillators.
20. **M.H.M. Soleiman, S.S. Abdel-Aziz, M.S. Sobhy.**  
In Reaction Plane Hadrons Anti-Hadrons Production in Relativistic Heavy Ion Collisions on two common event generators: HIJING and Hydjet++.
21. **Anatoly A. Lagutin, N.V. Volkov.**  
Average value of the cosmic ray injection spectrum at the Galactic sources.
22. **Ivan S. Karpikov, Yu.A. Fomin, N.N. Kalmykov, G.V. Kulikov, M.Yu. Kuznetsov, G.I. Rubtsov, V.P. Sulakov and S.V. Troitsky**  
Muon content of extensive air showers: EAS-MSU array, data versus simulations.
23. **Atsushi Iyono, Hiroki Matsumoto, Saya Yamamoto, Kazuhide Okei, Shuhei Tsuji, Nobusuke Takahashi and Nobuaki Ochi.**  
The primary energy spectrum with Linsley method, correcting heavy primary compositions effects, in the LAAS experiments.
24. **Hiroki Rokujo, H. Kawahara, R. Komatani, M. Morishita, T. Nakano, N. Otsuka, and M. Yoshimoto.**  
Latest Nuclear Emulsion Technology: Production, Readout and Interaction Analysis.
25. **Oleg B. Shchegolev, V.V. Alekseenko, Yu.V. Stenkin, V.I. Stepanov, X.H. Ma, S.W. Cui.**  
Study of the EAS size spectrum in thermal neutrons measured by PRISMA-YBJ array.
26. **Jean-Noel Capdevielle, Med Cherif Tala, Reda Attalahi.**  
Sources of coplanar emission for  $\sqrt{s} \geq 3$  TeV, valence diquark breaking, small and high diffractive masses. (20')