

ISVHECRI 2012 – XVII International Symposium on Very High Energy Cosmic Ray Interactions

EPJ Web of Conferences Volume 52 (2013)

**Berlin, Germany
10-15 August 2012**

Volume 1 of 1

Editors:

U. Gensch

M. Walter

ISBN: 978-1-63266-198-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution license:
<http://creativecommons.org/licenses/by/2.0/>

You are free to:

Share – copy and redistribute the material in any medium or format.

Adapt – remix, transform, and build upon the material for any purpose, even commercial.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. The copyright is retained by the corresponding authors.

Printed by Curran Associates, Inc. (2014)

For additional information, please contact EDP Sciences – Web of Conferences
at the address below.

EDP Sciences – Web of Conferences
17, Avenue du Hoggar
Parc d'Activité de Courtabœuf
BP 112
F-91944 Les Ulis Cedex A
France

Phone: +33 (0) 1 69 18 75 75

Fax: +33 (0) 1 69 28 84 91

contact@webofconferences.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

ACCELERATOR MEASUREMENTS

The Atlas Hadronic Physics Program And High Energy Cosmic Rays	1
<i>Pinfold J.L.</i>	
New Results From The CMS Experiment	8
<i>De Roeck Albert</i>	
Characteristics Of Hadronic Interactions In The Forward Direction	9
<i>Katkov I.</i>	
Results From ALICE	13
<i>Grosse-Oetringhaus Jan Fiete</i>	
The LHCb Experiment: Status And Recent Results	14
<i>Volyansky Dmytro</i>	
Results From TOTEM	22
<i>Eggert Karsten</i>	
The Results From LHCf And Future Prospects	24
<i>Ito Yoshitaka</i>	
Leading Hadron Production At HERA	32
<i>Buniatyan Armen</i>	
Results From NA61/SHINE	40
<i>Unger M.</i>	
New Results From The NA49 Experiment On Hadron Production In p+p And p+c Interactions And Survey Of Backward Hadrons In p+c Collisions	47
<i>Makariev M.</i>	

HADRONIC INTERACTION MODELS

QGSJET-II: Physics, Recent Improvements, And Results For Air Showers	52
<i>Ostapchenko S.</i>	
An Empirical Model To Describe Rapidity Density And Transverse Momentum Distributions	60
<i>Ohsawa Akinori, Shibuya Edison H., Tamada Masanobu</i>	

EAS PHYSICS

LHC Data And Extensive Air Showers	63
<i>Pierog Tanguy</i>	
Collimation Of Energetic Neutrinos And Muons Inside EAS Cores	71
<i>Capdevielle Jean-Noël, Cherif Talai Mohammed, Attallah Reda</i>	
Extensive Air Showers: From The Muonic Smoking Guns To The Hadronic Backbone	76
<i>Cazon L.</i>	
The Interplay Between The Electromagnetic And The Muonic Longitudinal Profile At Production	84
<i>Conceição Ruben, Andringa Sofia, Cazon Lorenzo, Pimenta Mário</i>	

CR PHYSICS IN THE KNEE REGION

Cosmic Rays Measurements Around The Knee Of The Primary Spectrum	89
<i>Chiavassa Andrea</i>	
Results On The Spectrum And Composition Of Cosmic Rays From The IceTop Air Shower Array Of The IceCube Observatory	95
<i>Tilav Serap</i>	
Primary Proton And Helium Spectra At Energy Range From 50 TeV To 10^{15} eV Observed With The New Tibet As Core Detector Array	96
<i>Huang Jing</i>	
Measurement Of Cosmic Ray Spectrum And Anisotropy With ARGO-YBJ	98
<i>Di Sciascio G.</i>	

Recent Results From The GRAPES-3 Experiment	103
<i>Gupta S.K.</i>	
Energy Spectrum Of Primary Cosmic Rays In A Wide Range Of Energy	108
<i>Kempa Janusz</i>	
Revised Data On γ-families Observed In X-ray Emulsion Chambers Of The Experiment PAMIR	109
<i>Borisov A.S., Guseva Z.M., Denisova V.G., Kanevskaya E.A., Kogan M.G, Maximenko V.M., Morozov A.E., Mukhamedshin R.A., Puchkov V.S., Pyatovsky S.E, Smirnova M.D.</i>	
A Quark Matter Contribution To The Cosmic Ray Spectrum	112
<i>Lawson Kyle</i>	
First Results Of The SPHERE Experiment	116
<i>Shaulov Sergey</i>	
Looking For Strange Quark Matter In Cosmic Rays.	117
<i>Shaulov S.B., Bezshapov S.P.</i>	

THE PHYSICS OF EPOS

The Physics Of EPOS	125
<i>Werner K., Karpenko Iu., Bleicher M., Pierog T.</i>	

CR PHYSICS ABOVE THE KNEE

Results From The Pierre Auger Observatory	130
<i>Perrone Lorenzo</i>	
Results From The Telescope Array And Review Of HiRes	137
<i>Sokolsky P.</i>	
Energy Spectrum Of UHECRs Measured By Newly Constructed Fluorescence Detectors In Telescope Array Experiment	143
<i>Fujii Toshihiro</i>	
Where Do The Highest Energy CR's Come From? And How Does The Milky Way Affect Their Arrival Directions?	148
<i>Kronberg Philipp</i>	
Status Of JEM-EUSO And Its Test Experiments EUSO-Balloon And TA-EUSO	150
<i>Haungs Andreas</i>	
CRPropa 2.0 - Public Software To Model Extragalactic Propagation Of Ultra-High Energy Nuclei	155
<i>van Vliet Arjen, Kampert Karl-Heinz, Kulbartz Jörg, Maccione Luca, Nierstenhoefer Nils, Schiffer Peter, Sigl Günter</i>	
The GiBUU Transport Model	160
<i>Weil Janus, Mosel Ulrich</i>	

AIR SHOWER MEASUREMENTS AND INTERACTION MODELS

Interactions Of Cosmic Rays In The Primary Energy Range (0.1-1) PeV Studied By The ARGO-YBJ Experiment	161
<i>D'Amone A., De Mitri I., Surdo A.</i>	
Test Of Hadronic Interaction Models With The KASCADE-Grande Muon Data	166
<i>Arteaga-Velázquez J.C., Apel W.D., Bekk K., Bertaina M., Blümer J., Bozdog H., Brancus I.M., Cantoni E., Chiavassa A., Cossavella F., Daumiller K., de Souza V., Di Pierre F., Doll P., Engel R., Engler J., Finger M., Fuchs B., Fuhrmann D., Gils H.J., Glasstetter R., Grupen C., Haungs A., Heck D., Hörandel J.R., Huber D., Huege T., Kampert K-H., Kang D., Klages H.O., Link K., Luczak P., Ludwig M., Mathes H.J., Mayer H.J., Melissas M., Milke J., Mitrica B., Morello C., Oehlschläger J., Ostapchenko S., Palmieri N., Petcu M., Pierog T., Rebel H., Roth M., Schieler H., Schoo S., Schröder F. G., Sima O., Toma G., Trinchero G.C., Ulrich H., Weindl A., Wochele J., Wommer M., Zabierowski J.</i>	
Measurements Of The Muonic Component Of Air Showers At The Pierre Auger Observatory	171
<i>Allen Jeff</i>	
Proton-Air And Proton-Proton Cross Sections	172
<i>Ulrich Ralf</i>	
Evidence For Some New Physical Process In Ultrahigh-Energy Collisions	179
<i>Farrar Glennys R., Allen Jeff</i>	

A Systematic Study Of The Hybrid Experiment At Mt. Chacaltaya	180
<i>Tamada M., Aoki H., Honda K., Inoue N., Kawasumi N., Martinic N., Ochi N., Ohmori N., Ohsawa A., Semba H., Ticona R.</i>	

DIRECT MEASUREMENTS OF COSMIC RAYS IN SPACE

Direct Measurements Of Cosmic Rays In Space	185
<i>Sparvoli Roberta</i>	

MUONS AND NEUTRINOS

Uncertainties On Low-x Parton Densities And The Corresponding High-Energy Neutrino Cross Sections	186
<i>Cooper-Sarkar Amanda</i>	
Theory Predictions For Inclusive Atmospheric Neutrino Flux	187
<i>Honda Morihito</i>	
Influence Of Hadronic Interaction Models And The Cosmic Ray Spectrum On The High-Energy Atmospheric Muon And Neutrino Flux	191
<i>Fedynitch Anatoli, Becker Tjus Julia, Desiati Paolo</i>	
Atmospheric Leptons	193
<i>Gaisser Thomas K.</i>	
IceCube And ANTARES	202
<i>Brunner Jürgen</i>	
Atmospheric Muons As IceCube Signal	207
<i>Berghaus Patrick</i>	
Recent Results Of A Search For Cosmogenic PeV To EeV Neutrinos With IceCube	214
<i>Middel Eike</i>	
The ANTARES Neutrino Telescope	215
<i>Margiotta Annarita</i>	
Multiplicity Spectrum Of Muon Bundles And Primary CR Composition In The Range 1 – 10000 TeV	220
<i>Petkov V.B., Szabelski J., Gaponenko A.N., Alikhanov I.</i>	
Heavy Neutrino Decay At SHALON	225
<i>Sinitsyna V.G., Masip M., Sinitsyna V.Y.</i>	

GAMMA-RAYS

The Origin Of Cosmic Rays And TeV Gamma-Ray Astronomy	230
<i>Maier Gernot</i>	
Some Contributions Of MAGIC To The Physics Of Cosmic Rays	236
<i>Gozzini S.R.</i>	
Search For High-Energy Gamma-Ray Emission and Upgrade Of The Gamma Experiment On Mt. Aragats	241
<i>Martirosov R.M., Babayan H., Erlykin A.D., Gallant Y.A., Garyaka A.P., Jones L.W., Kempa J., Nikolskaya N.M., Pattison B., Procureur J., Spiering Ch., Ter-Antonyan S.V., Vardanyan H.</i>	
Generation Of Cosmic Rays In Historical Supernova Remnants	245
<i>Sinitsyna V.G., Sinitsyna V.Y.</i>	
Very High Energy Gamma-Ray Emission Of NGC 1275 And 3c382 And The Possible Activity Nature Of The Seyfert Galaxies	250
<i>Sinitsyna V.G., Sinitsyna V.Y.</i>	
Extragalactic Background Light Expected From Photon-Photon Absorption On Spectra Of Distant Active Galactic Nuclei	255
<i>Sinitsyna V.G., Sinitsyna V.Y.</i>	

DETECTORS AND METHODS

Design Of A Cherenkov Telescope For The Measurement Of PCR Composition Above 1 PeV	260
<i>Borisov A S, Galkin V I</i>	

The PAMIR XXI Project Of A Complex Setup For The PCR Study In A Wide Energy Range 10^{14} – 10^{18} eV..... 265
Borisov Alexander, Muminov Khikmat, Galkin Vladimir, Puchkov Vitaly

New Detection Technologies For Ultra-High Energy Cosmic Rays And Neutrinos..... 266
Böser Sebastian

SUMMARY (THEORY)

Theory Summary: Very High Energy Cosmic Rays..... 268
Sarkar Subir

SUMMARY (EXPERIMENT)

Experimental Summary: Very High Energy Cosmic Rays And Their Interactions..... 269
Kampert Karl-Heinz

Author Index