

XIIth Quark Confinement and the Hadron Spectrum

EPJ Web of Conferences Volume 137 (2017)

Thessaloniki, Greece
29 August - 3 September 2016

Part 1 of 3

Editors:

**Yiota Foka
Nora Brambilla
Vladimir Kovalenko**

ISBN: 978-1-5108-3832-1

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. (2017)

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-edps@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: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PART 1

PREFACE	1
<i>Foka Y., Brambilla N., Kovalenko V.</i>	
ROUND TABLE: FLAVOUR ANOMALIES IN $B \rightarrow SL^+L^-$ PROCESSES	7
<i>Blake T., Gersabeck M., Hofer L., Jäger S., Liu Z., Zwicky R.</i>	
ROUND TABLE: WHAT CAN WE LEARN ABOUT CONFINEMENT AND ANOMALOUS EFFECTS IN QCD USING ANALOG SYSTEMS?	28
<i>Cristina Diamantini M., Kharzeev Dmitri, Molochkov Alexander, Schäfer Thomas, Sulejmanpašić Tin</i>	
ROUND TABLE: NUCLEON TOMOGRAPHY. WHAT CAN WE DO BETTER TODAY THAN RUTHERFORD 100 YEARS AGO?	42
<i>Stefanis N. G. (chair), Alexandrou Constantia, Horn Tanja, Moutarde Hervé, Scimemi Ignazio</i>	
NOVEL APPLICATIONS OF LATTICE QCD: PARTON DISTRIBUTIONS, PROTON CHARGE RADIUS AND NEUTRON ELECTRIC DIPOLE MOMENT	74
<i>Alexandrou Constantia</i>	
QCD WITH CHIRAL IMBALANCE: MODELS VS. LATTICE	94
<i>Andrianov Alexander, Andrianov Vladimir, Espriu Domenech</i>	
FRONTIERS OF FINITE TEMPERATURE LATTICE QCD	108
<i>Borsányi Szabolcs</i>	
ARCHEOLOGY AND EVOLUTION OF QCD	122
<i>De Rújula A.</i>	
EFFECTIVE FIELD THEORIES FOR HEAVY PROBES IN A HOT QCD PLASMA AND IN THE EARLY UNIVERSE	139
<i>Escobedo Miguel A.</i>	
CONFINEMENT FROM CENTER VORTICES: A REVIEW OF OLD AND NEW RESULTS	151
<i>Greensite Jeff</i>	
CHARMING QUASI-EXOTIC OPEN-FLAVOR MESONS	163
<i>Hilger Thomas, Krassnigg Andreas</i>	
CHIRAL MAGNETIC SUPERCONDUCTIVITY	173
<i>Kharzeev Dmitri E.</i>	
HEP IN GREEK CLASSES	180
<i>Fassouliotis Dimitris, Kourkouvelis Christine, Vourakis Stylianos</i>	
CONSTRAINING GRAVITY WITH HADRON PHYSICS: NEUTRON STARS, MODIFIED GRAVITY AND GRAVITATIONAL WAVES	190
<i>Llanes-Estrada Felipe J.</i>	
ROY-STEINER-EQUATION ANALYSIS OF PION-NUCLEON SCATTERING	204
<i>Meißner U.-G., Ruiz de Elvira J., Hoferichter M., Kubis B.</i>	
X, Y AND Z STATES	216
<i>Nielsen M., Albuquerque R. M., Dias J. M., Khemchandani K. P., Martínez Torres A., Navarra F. S., Zanetti C. M.</i>	
PRECISION PHYSICS WITH QCD	227
<i>Pich Antonio</i>	
EMERGENT PHENOMENA AND PARTONIC STRUCTURE IN HADRONS	239
<i>Roberts Craig D., Mezrag Cédric</i>	
RECENT PROGRESS IN UNDERSTANDING DECONFINEMENT AND CHIRAL RESTORATION PHASE TRANSITIONS	251
<i>Shuryak Edward</i>	
SIMPLIFIED LIMITS ON NEW LHC RESONANCES	261
<i>Simmons Elizabeth H., Chivukula R. Sekhar, Ittisamai Pawin, Mohan Kirtimaan</i>	
QCD PROPAGATORS AND VERTICES FROM LATTICE QCD (IN MEMORY OF MICHAEL MÜLLER-PREUBKER)	274
<i>Sternbeck André</i>	
MESON SPECTROSCOPY, RESONANCES AND SCATTERING ON THE LATTICE	288
<i>Thomas Christopher E.</i>	
CHALLENGES IN HEAVY FLAVOR AND QUARKONIUM PRODUCTION IN P + P COLLISIONS AT THE LHC	298
<i>Vogt R.</i>	

REVIEW OF EXPERIMENTAL AND THEORETICAL STATUS OF THE PROTON RADIUS PUZZLE	310
<i>Hill Richard J.</i>	
INTRODUCTION TO CHIRAL SYMMETRY IN QCD	332
<i>Sazdjian H.</i>	
THREE-POINT VERTEX FUNCTIONS IN YANG-MILLS THEORY AND QCD IN LANDAU GAUGE	351
<i>Blum Adrian L., Alkofer Reinhard, Huber Markus Q., Windisch Andreas</i>	
DYONS AND ROBERGE - WEISS TRANSITION IN LATTICE QCD	361
<i>Bornyakov V. G., Boyda D. L., Goy V. A., Ilgenfritz E.-M., Martemyanov B. V., Molochkov A. V., Nakamura Atsushi, Nikolaev A. A., Zakharov V. I.</i>	
THE LOWEST LANDAU LEVEL IN QCD	371
<i>Bruckmann Falk, Endroodi Gergely, Giordano Matteo, Katz Sándor D., Kovács Tamás G., Pittler Ferenc, Wellenhofer Jacob</i>	
DYSON-SCHWINGER APPROACH TO HAMILTONIAN QCD	381
<i>Campagnari Davide, Reinhardt Hugo, Huber Markus Q., Vastag Peter, Ebadati Ehsan</i>	
CONFINING PROPERTIES OF QCD IN STRONG MAGNETIC BACKGROUNDS	388
<i>Bonati Claudio, D'Elia Massimo, Mariti Marco, Mesiti Michele, Negro Francesco, Rucci Andrea, Sanfilippo Francesco</i>	
DECONFINEMENT AND CHIRAL TRANSITION IN ADS/QCD WALL MODELS SUPPLEMENTED WITH A MAGNETIC FIELD	398
<i>Dudal David, Granado Diego R., Mertens Thomas G.</i>	
POLYAKOV LINE ACTIONS FROM SU(3) LATTICE GAUGE THEORY WITH DYNAMICAL FERMIONS VIA RELATIVE WEIGHTS	409
<i>Höllwieser Roman, Greensite Jeff</i>	
TOWARDS NEXT-TO-LEADING ORDER CORRECTIONS TO THE HEAVY QUARK POTENTIAL IN THE EFFECTIVE STRING THEORY	420
<i>Hwang Sungmin</i>	
GAUGE-INDEPENDENT HIGGS MECHANISM AND THE IMPLICATIONS FOR QUARK CONFINEMENT	429
<i>Kondo Kei-Ichi</i>	
CONFINEMENT, NONABELIAN MONOPOLES, AND 2D CP^{N-1} MODEL ON THE WORLDSHEET OF FINITE-LENGTH STRINGS	437
<i>Konishi Kenichi</i>	
CONFINEMENT AND CHIRAL SYMMETRY BREAKING FROM AN ENSEMBLE OF INTERACTING INSTANTON-DYONS(MONOPOLES) IN SU(2) QCD	447
<i>Larsen Rasmus</i>	
GAUGE ENGINEERING AND PROPAGATORS	456
<i>Maas Axel</i>	
HEAVY-HEAVY AND HEAVY-LIGHT QUARKS INTERACTIONS GENERATED BY QCD VACUUM	465
<i>Musakhanov Mirzayusuf</i>	
DOMAIN WALL NETWORK AS QCD VACUUM: CONFINEMENT, CHIRAL SYMMETRY, HADRONIZATION	474
<i>Nedelko Sergei N., Voronin Vladimir V.</i>	
SU(N) → Z(N) DUAL SUPERCONDUCTOR MODELS: THE MAGNETIC LOOP ENSEMBLE POINT OF VIEW	482
<i>Oxman Luis E.</i>	
TOWARDS A THEORETICAL DESCRIPTION OF DENSE QCD	492
<i>Philipsen Owe</i>	
FINITE TEMPERATURE AND THE POLYAKOV LOOP IN THE COVARIANT VARIATIONAL APPROACH TO YANG-MILLS THEORY	502
<i>Quandt Markus, Reinhardt Hugo</i>	
THREE-GLUON GREEN FUNCTIONS: LOW-MOMENTUM INSTANTON DOMINANCE AND ZERO-CROSSING	511
<i>Rodríguez-Quintero J., Athenodorou A., Binosi D., Boucaud Ph., De Soto F., Papavassiliou J., Zafeiropoulos S.</i>	
HAMILTONIAN APPROACH TO QCD IN COULOMB GAUGE AT ZERO AND FINITE TEMPERATURE	521
<i>Reinhardt H., Burgio G., Campagnari D., Ebadati E., Heffner J., Quandt M., Vastag P., Vogt H.</i>	
ASYMPTOTIC FREEDOM IN THE HAMILTONIAN APPROACH TO BINDING OF COLOR	533
<i>Gómez-Rocha María</i>	

THE DARK SIDE OF THE PROPAGATORS: EXPLORING THEIR ANALYTIC PROPERTIES BY A MASSIVE EXPANSION	541
<i>Siringo Fabio</i>	
QCD-INSPIRED DETERMINATION OF NJL MODEL PARAMETERS	552
<i>Springer Paul, Braun Jens, Rechenberger Stefan, Rennecke Fabian</i>	
SUPERCONFORMAL ALGEBRAIC APPROACH TO HADRON STRUCTURE	562
<i>de Téramond Guy F., Brodsky Stanley J., Deur Alexandre, Dosch Hans Günter, Sufian Raza Sabbir</i>	
INSTANTANEOUS DYNAMICS OF QCD	572
<i>Cooper Patrick, Zwanziger Daniel</i>	
TOWARDS OVERCOMING THE MONTE CARLO SIGN PROBLEM WITH TENSOR NETWORKS	579
<i>Bañuls Mari Carmen, Cichy Krzysztof, Ignacio Cirac J., Jansen Karl, Kühn Stefan, Saito Hana</i>	
EMERGENT HIGGSLESS SUPERCONDUCTIVITY	589
<i>Cristina Diamantini M., Trugenberger Carlo A.</i>	
SOME RELATIONS FOR QUARK CONFINEMENT AND CHIRAL SYMMETRY BREAKING IN QCD	602
<i>Suganuma Hideo, Doi Takahiro M., Redlich Krzysztof, Sasaki Chihiro</i>	
GAUGE SYMMETRIES AND STRUCTURE OF PROTEINS	613
<i>Molochkov Alexander, Begun Alexander, Niemi Antti</i>	
NUCLEON STRUCTURE FUNCTIONS AND LONGITUDINAL SPIN ASYMMETRIES	621
<i>Dahiya Harleen, Randhawa Monika, Dhiman Nisha</i>	
A DATA-DRIVEN APPROACH TO η AND η' DALITZ DECAYS	631
<i>Escribano Rafael</i>	
CONSTRAINTS ON THE $S=-1$ MESON-BARYON INTERACTION AT NLO	636
<i>Feijoo A., Magas V.K., Ramos A.</i>	
PROGRESS IN THREE-PARTICLE SCATTERING FROM LQCD	646
<i>Briceño Raúl A., Hansen Maxwell T., Sharpe Stephen R.</i>	

PART 2

MESON FORM FACTORS AND DEEP EXCLUSIVE MESON PRODUCTION EXPERIMENTS	655
<i>Horn Tanja</i>	
DECAYS OF NEUTRAL PIONS: ELECTROMAGNETIC TRANSITION FORM FACTOR AND RADIATIVE CORRECTIONS	664
<i>Husek Tomáš</i>	
SCHEME VARIATIONS OF THE QCD COUPLING	672
<i>Boito Diogo, Jamin Matthias, Miravillas Ramon</i>	
LIGHT-FRONT FIELD THEORY IN THE DESCRIPTION OF HADRONS	682
<i>Ji Chueng-Ryong</i>	
OPE OF GREEN FUNCTIONS IN THE ODD SECTOR OF QCD	692
<i>Kadavý T., Kampf K., Novotný J.</i>	
PION-ETA SCALAR-ISOVECTOR 3-COUPLED CHANNEL AMPLITUDE FITTED TO BRANCHING RATIOS AND THRESHOLD PLUS SUBTHRESHOLD PARAMETERS	700
<i>Kaminski Robert, Bibrzycki Lukasz</i>	
MESONS IN ULTRA-INTENSE MAGNETIC FIELD: AN EVADED COLLAPSE	708
<i>Kerbikov B.O., Andreichikov M.A., Simonov Yu.A.</i>	
LIGHT-MESON SPECTROSCOPY AT COMPASS	715
<i>Krinner Fabian</i>	
POLARISED DRELL-YAN AT COMPASS	724
<i>Longo Riccardo</i>	
ON THE DESCRIPTION OF EXOTIC HADRON STATES WITHIN QCD SUM RULES	731
<i>Lucha Wolfgang, Melikhov Dmitri</i>	
QUARK PROPAGATOR WITH ELECTROWEAK INTERACTIONS IN THE DYSON-SCHWINGER APPROACH	739
<i>Mian Walid Ahmed, Maas Axel</i>	
IMPROVED ESTIMATES OF THE PION-PHOTON TRANSITION FORM FACTOR IN THE ($1 \leq Q^2 \leq 5$) GEV^2 RANGE AND THEIR THEORETICAL UNCERTAINTIES	748
<i>Mikhailov S. V., Pimikov A. V., Stefanis N. G.</i>	
UNITARITY APPROACH TO THE MASS-DEPENDENT FIT OF 3P RESONANCE PRODUCTION DATA FROM THE COMPASS EXPERIMENT	758
<i>Mikhasenko Mikhail, Jackura Andrew, Ketzer Bernhard, Szczepaniak Adam</i>	

RECENT RESULTS ON THE MESON AND BARYON SPECTRUM FROM LATTICE QCD	767
<i>Mohler Daniel</i>	
ROLE OF THE STRANGE QUARK IN THE P(770) MESON	779
<i>Molina R., Guo D., Hu B., Alexandru A., Doering M.</i>	
CONCURRENT APPROACHES TO GENERALIZED PARTON DISTRIBUTION MODELING: THE PION'S CASE	790
<i>Chouika N., Mezrag C., Moutarde H., Rodríguez-Quintero J.</i>	
DISPERSIVE APPROACH TO QCD AND HADRONIC CONTRIBUTIONS TO ELECTROWEAK OBSERVABLES	800
<i>Nesterenko Alexander V.</i>	
NEUTRAL PION FORM FACTOR MEASUREMENT BY THE NA62 EXPERIMENT	810
<i>Pepe Monica</i>	
RESONANCE PRODUCTION AND DECAY IN PION INDUCED COLLISIONS WITH HADES	820
<i>Scozzi Federico</i>	
FLAVOUR DECOMPOSITION OF ELECTROMAGNETIC TRANSITION FORM FACTORS OF NUCLEON RESONANCES	830
<i>Segovia Jorge, Roberts Craig D.</i>	
RARE B MESON DECAYS ON THE LATTICE	840
<i>Agadjanov Andria</i>	
MOLECULAR PARTNERS OF THE X(3872) FROM HEAVY-QUARK SPIN SYMMETRY: A FRESH LOOK	849
<i>Baru V., Epelbaum E., Filin A. A., Hanhart C., Nefediev A.V.</i>	
EXPLANATION OF THE X(4260) AND X(4360) AS MOLECULAR STATES	858
<i>Durkaya B., Bayar M.</i>	
NUCLEAR EFFECTS ON TETRAQUARK PRODUCTION BY DOUBLE PARTON SCATTERING	867
<i>Carvalho F., Navarra F. S.</i>	
BORN-OPPENHEIMER APPROXIMATION IN EFT AND QUARKONIUM HYBRIDS	875
<i>Castellà Jaume Tarrús</i>	
EXOTIC QUARKONIUM STATES IN CMS	885
<i>Cristella Leonardo</i>	
INVESTIGATING THE STRUCTURE OF X(4140) IN QCD	893
<i>Dag H., Türkan A.</i>	
THE NON-PERTURBATIVE UNQUENCHED QUARK MODEL	897
<i>Entern D.R., Ortega P.G., Fernández F.</i>	
η_c HADROPRODUCTION AT LARGE HADRON COLLIDER CHALLENGES NRQC FACTORIZATION	903
<i>Butenschoen Mathias, He Zhi-Guo, Kniehl Bernd A.</i>	
POINCARÉ INVARIANCE IN LOW-ENERGY EFTS FOR QCD	912
<i>Hwang Sungmin</i>	
FORM FACTORS AND DIFFERENTIAL DISTRIBUTIONS IN RARE RADIATIVE LEP-TONIC B-DECAYS	919
<i>Kozachuk Anastasiia, Nikitin Nikolai</i>	
EFFECTIVE FIELD THEORY FOR LONG-RANGE PROPERTIES OF BOTTOMONIUM	928
<i>Krein Gastão</i>	
J/ψ + Z PRODUCTION AT THE LHC	937
<i>Lansberg Jean-Philippe, Shao Hua-Sheng</i>	
RELATIVISTIC PHENOMENOLOGY OF MESON SPECTRA WITH A COVARIANT QUARK MODEL IN MINKOWSKI SPACE	943
<i>Leitão Sofia, Stadler Alfred, Peña M. T., Biernat Elmar P.</i>	
TRACES OF THE HIDDEN-CHARM S=-1 PENTAQUARK IN THE $\Lambda_b \rightarrow J/\psi \eta \Lambda$ DECAY	951
<i>Magas V.K., Feijoo A., Oset E., Ramos A.</i>	
STRING POINT OF VIEW FOR HEAVY-LIGHT MESONS	961
<i>Dong Yubin, Lü Qi-Fang, Matsuki Takayuki</i>	
HEAVY-MESON DECAY CONSTANTS: ISOSPIN BREAKING FROM QCD SUM RULES	965
<i>Lucha Wolfgang, Melikhov Dmitri, Simula Silvano</i>	
OPEN-CHARM PRODUCTION MEASUREMENTS IN PP, 1 P-PB AND PB-PB COLLISIONS WITH ALICE AT THE LHC	973
<i>Meninno Elisa</i>	
PRODUCTION OF EXOTIC CHARMONIUM IN ULTRA-PERIPHERAL HEAVY ION COLLISIONS	986
<i>Bertulani C.A., Gonçalves V.P., Moreira B.D., Navarra F. S.</i>	

PHENOMENOLOGY OF NEAR-THRESHOLD STATES: A PRACTICAL PARAMETRISATION FOR THE LINE SHAPES	992
<i>Guo F.-K., Hanhart C., Kalashnikova Yu. S., Matuschek P., Mizuk R.V., Nefediev A. V., Wang Q., Wynen J.-L.</i>	
EXPERIMENTAL HIGHLIGHTS: HEAVY QUARK PHYSICS IN HEAVY-ION COLLISIONS AT RHIC	1002
<i>Nouicer Rachid</i>	
TENSIONS IN THE FLAVOUR SECTOR	1008
<i>Ricciardi Giulia</i>	
RELATIVISTIC CORRECTIONS TO ELECTROMAGNETIC HEAVY QUARKONIUM PRODUCTION	1017
<i>Shtabovenko Vladyslav</i>	
RELATIVISTIC 2-BODY BOTTOMONIUM DECAYS	1025
<i>Barducci Andrea, Giachetti Riccardo, Sorace Emanuele</i>	
HEAVY HYBRIDS: DECAY TO AND MIXING WITH HEAVY QUARKONIUM	1031
<i>Oncala Rubén, Soto Joan</i>	
PNRQCD DETERMINATION OF E1 RADIATIVE TRANSITIONS	1041
<i>Steinbeißer Sebastian, Segovia Jorge</i>	
RECENT RESULTS FROM THE NA61/SHINE STRONG INTERACTION PHYSICS PROGRAMME	1051
<i>Andronov Evgeny</i>	
RECENT PROGRESS ON THE UNDERSTANDING OF THE MEDIUM-INDUCED JET EVOLUTION AND ENERGY LOSS IN PQCD	1059
<i>Apolinário Liliana</i>	
TEMPERATURE DEPENDENCE OF SHEAR VISCOSITY OF SU(3)-GLUODYNAMICS WITHIN LATTICE SIMULATION	1069
<i>Astrakhantsev N., Braguta V., Kotov A.</i>	
PARITY DOUBLING OF NUCLEONS, DELTA AND OMEGA BARYONS ACROSS THE DECONFINEMENT PHASE TRANSITION	1076
<i>Aarts Gert, Allton Chris, De Boni Davide, Hands Simon, Praki Chrisanthi, Jäger Benjamin, Skullerud Jon-Ivar</i>	
JETS IN PB-PB COLLISIONS AT ALICE	1084
<i>Busch Oliver</i>	
EVENT-BY-EVENT PICTURE FOR THE MEDIUM-INDUCED JET EVOLUTION	1091
<i>Escobedo Miguel A., Iancu Edmond</i>	
NEUTRAL MESON PRODUCTION MEASUREMENTS WITH THE ALICE AT THE LHC	1099
<i>Ganoti Paraskevi</i>	
THE QCD EQUATION OF STATE AT FINITE DENSITY FROM ANALYTICAL CONTINUATION	1109
<i>Günther Jana, Bellwied Rene, Borsanyi Szabolcs, Fodor Zoltan, Katz Sandor D., Pasztor Attila, Ratti Claudia</i>	
AN EXPLORATORY STUDY OF YANG-MILLS THREE-POINT FUNCTIONS AT NON-ZERO TEMPERATURE	1118
<i>Huber Markus Q.</i>	
GEOMETRICAL CLUSTERIZATION AND DECONFINEMENT PHASE TRANSITION IN SU(2) GLUODYNAMICS	1126
<i>Ivanytskyi A., Bugaev K., Nikonov E., Ilgenfritz E.-M., Oliinychenko D., Sagun V., Mishustin I., Zinovjev G., Petrov V.</i>	
PHASE DIAGRAM OF DENSE TWO-COLOR QCD WITHIN LATTICE SIMULATIONS	1135
<i>Braguta V.V., Ilgenfritz E.-M., Kotov A.Yu., Molochkov A.V., Nikolaev A.A.</i>	
AZIMUTHAL ANISOTROPY OF LONG-RANGE CORRELATIONS AT LHC ENERGY IN MONTE CARLO MODEL WITH STRING FUSION	1143
<i>Kovalenko Vladimir</i>	
INITIAL CONDITIONS IN AA AND PA COLLISIONS	1148
<i>Lappi Tuomas</i>	
OSET OR HOW TO GO BEYOND HARD THERMAL LOOPS	1158
<i>Manuel Cristina, Soto Joan, Stetina Stephan</i>	
SEMIHOLOGRAPHY FOR HEAVY ION COLLISIONS	1165
<i>Mukhopadhyay Ayan, Preis Florian</i>	
CHIRAL SYMMETRY RESTORATION FROM THE HADRONIC REGIME	1177
<i>Gómez Nicola Angel, Cortés Santiago, Morales John, Ruiz de Elvira Jacobo, Andrés Ricardo Torres</i>	
STUDY OF LATTICE QCD AT FINITE BARYON DENSITY USING THE CANONICAL APPROACH	1187
<i>Borniyakov V. G., Boyda D. L., Goy V. A., Molochkov A. V., Nakamura Atsushi, Nikolaev A. A., Zakharov V. I.</i>	

QUARKONIA AT $T > 0$ AND LATTICE QCD	1195
<i>Rothkopf Alexander</i>	
BOTTOMONIA SUPPRESSION IN AN ANISOTROPIC QUARK-GLUON PLASMA	1206
<i>Ryblewski Radoslaw</i>	
HEAVY-FLAVOUR PRODUCTIONS IN THE RELATIVISTIC HEAVY ION COLLISIONS IN LHC	1214
<i>Sakai Shingo</i>	
FLAVOR CORRELATIONS AND THE QCD PHASE STRUCTURE	1223
<i>Sasaki Chihiro</i>	
EXACT SUM RULES FOR VECTOR CHANNEL AT FINITE TEMPERATURE AND THEIR APPLICATION TO LATTICE QCD ANALYSIS	1231
<i>Satow Daisuke, Gubler Philipp</i>	
EARLY HYDRODYNAMISATION, ENERGY LOSS AND SMALL SYSTEMS IN HOLOGRAPHIC HEAVY ION COLLISIONS	1241
<i>van der Schee Wilke</i>	
PERTURBATIVE ASPECTS OF THE PHASE DIAGRAM OF QCD WITH HEAVY QUARKS	1250
<i>Serreau Julien, Reinosa Urko</i>	
THERMAL D MESONS FROM ANISOTROPIC LATTICE QCD	1257
<i>Kelly Aoife, Skullerud Jon-Ivar</i>	
RECENT PROGRESS IN ANISOTROPIC HYDRODYNAMICS	1263
<i>Strickland Michael</i>	

PART 3

RECENT DEVELOPMENTS IN QCD THERMODYNAMICS AND COLLECTIVE EXCITATIONS FROM HARD-THERMAL-LOOP EFFECTIVE THEORY	1271
<i>Su Nan</i>	
LATTICE CALCULATION OF THE POLYAKOV LOOP AND POLYAKOV LOOP CORRELATORS	1278
<i>Weber Johannes Heinrich</i>	
DIRECT-PHOTON SPECTRA AND ANISOTROPIC FLOW IN HEAVY ION COLLISIONS FROM HOLOGRAPHY	1288
<i>Iatrakis Ioannis, Kiritsis Elias, Shen Chun, Yang Di-Lun</i>	
COMPLEX LANGEVIN SIMULATIONS OF A FINITE DENSITY MATRIX MODEL FOR QCD	1298
<i>Bloch Jacques, Glesaaen Jonas, Philipsen Owe, Verbaarschot Jacobus, Zafeiropoulos Savvas</i>	
THERMALIZATION IN THE INITIAL STAGE OF HEAVY ION COLLISIONS	1308
<i>Zhu Yan</i>	
THE MUON G-2 EXPERIMENT AT FERMILAB	1316
<i>Chapelain Antoine</i>	
STUDIES OF THE $TT^{\bar{H}}$ PRODUCTION AT 13 TEV	1326
<i>Cirkovic Predrag</i>	
NEW PHYSICS SEARCHES FROM NUCLEON MATRIX ELEMENTS IN LATTICE QCD	1334
<i>Constantinou Martha</i>	
RECENT PROGRESS ON QCD INPUTS FOR AXION PHENOMENOLOGY	1344
<i>Bonati Claudio, D'Elia Massimo, Mariti Marco, Martinelli Guido, Mesiti Michele, Negro Francesco, Sanfilippo Francesco, Villadoro Giovanni</i>	
Q_{WEAK}: FIRST DIRECT MEASUREMENT OF THE PROTON'S WEAK CHARGE	1353
<i>Androic D., Armstrong D.S., Asaturyan A., Averett T., Balewski J., Bartlett K., Beaufait J., Beminiwattha R.S., Benesch J., Benmokhtar F., Birchall J., Carlini R.D., Cates G.D., Cornejo J.C., Covrig S., Dalton M.M., Davis C.A., Deconinck W., Diefenbach J., Dowd J.F., Dunne J.A., Dutta D., Duvall W.S., Elaasar M., Falk W.R., Finn J.M., Forest T., Gal C., Gaskell D., Gericke M.T.W., Grames J., Gray V.M., Grimm K., Guo F., Hoskins J.R., Johnston K., Jones D., Jones M., Jones R., Kargiantoulakis M., King P.M., Korkmaz E., Kowalski S., Leacock J., Leckey J., Lee A.R., Lee J.H., Lee L., MacEwan S., Mack D., Magee J.A., Mahurin R., Mammei J., Martin J.W., McHugh M.J., Meekins D., Mei J., Michaels R., Micherdzinska A., Mkrтчyan A., Mkrтчyan H., Morgan N., Myers K.E., Narayan A., Ndukum L.Z., Nelyubin V., Nuhait H., Nuruzzaman, van Oers W.T.H., Opper A.K., Page S.A., Pan J., Paschke K.D., Phillips S.K., Pitt M.L., Poelker M., Rajotte J.F., Ramsay W.D., Roche J., Sawatzky B., Seva T., Shabestari M.H., Silwal R., Simicevic N., Smith G.R., Solvignon P., Spayde D.T., Subedi A., Subedi R., Suleiman R., Tadevosyan V., Tobias W.A., Tvaskis V., Waidyawansa B., Wang P., Wells S.P., Wood S.A., Yang S., Young R.D., Zang P., Zhamkochyan S.</i>	
CONTROLLING QUARK MASS DETERMINATIONS NON-PERTURBATIVELY IN THREE-FLAVOUR QCD	1361
<i>Campos Isabel, Fritzsck Patrick, Pena Carlos, Preti David, Ramos Alberto, Vladikas Anastassios</i>	

THE CONTRIBUTION OF NOVEL CP VIOLATING OPERATORS TO THE NEDM USING LATTICE QCD	1371
<i>Gupta Rajan, Bhattacharya Tanmoy, Cirigliano Vincenzo, Yoon Boram</i>	
RECENT PROGRESS ON INTRINSIC CHARM	1380
<i>Hobbs T. J.</i>	
MEASUREMENT OF THE WZ BOSON PAIR PRODUCTION CROSS SECTION AT 13 TEV AND CONFIDENCE INTERVALS ON ANOMALOUS TRIPLE GAUGE COUPLINGS WITH THE ATLAS DETECTOR.....	1388
<i>Iliadis Dimitrios</i>	
NEW EXPERIMENTAL RESULTS FOR THE 17 MEV PARTICLE CREATED IN 8BE	1397
<i>Krasznahorkay A.J., Csatlós M., Csige L., Gulyás J., Hunyadi M., Ketel T.J., Krasznahorkay A., Kuti I., Nagy Á., Nyakó B.M., Sas N., Timár J., Vajda I.</i>	
NUCLEAR PHYSICS INSIGHTS FOR NEW-PHYSICS SEARCHES USING NUCLEI: NEUTRINOLESS $\beta\beta$ DECAY AND DARK MATTER DIRECT DETECTION	1404
<i>Menéndez Javier</i>	
CONSTRAINING TOP-HIGGS COUPLINGS AT HIGH AND LOW ENERGY.....	1415
<i>Meregheffi Emanuele</i>	
EFFECTIVE FIELD THEORIES FOR MUONIC HYDROGEN	1426
<i>Peset Clara</i>	
PROBING QCD PERTURBATION THEORY AT HIGH ENERGIES WITH CONTINUUM EXTRAPOLATED LATTICE DATA	1439
<i>Sint Stefan</i>	
PRECISION MEASUREMENTS OF TOP QUARK PRODUCTION WITH THE ATLAS DETECTOR.....	1449
<i>Stolte Philipp</i>	
SEARCH FOR HEAVY RESONANCES IN VECTOR BOSON FUSION	1460
<i>Zhang Guangyi</i>	
ROLE OF NUCLEAR SPIN-ORBIT COUPLING ON THE CONSTITUTION OF THE OUTER CRUST OF A NONACCRETING NEUTRON STAR.....	1470
<i>Chamel N., Fantina A. F., Pearson J. M., Goriely S.</i>	
THE SYMMETRY ENERGY AT SUPRASATURATION DENSITY AND THE ASY-EOS EXPERIMENT AT GSI.....	1476
<i>De Filippo E., Russotto P., Acosta L., Adamczyk M., Al-Ajlan A., Al-Garawi M., Al-Homaidhi S., Amorini F., Auditore L., Aumann T., Ayyad Y., Basrak Z., Benlliure J., Boisjoli M., Boretzky K., Brzychczyk J., Budzanowski A., Caesar C., Cardella G., Cammarata P., Chajecski Z., Chartier M., Chbihi A., Colonna M., Cozma M.D., Czech B., Di Toro M., Famiano M., Gannon S., Gašparic I., Grassi L., Guazzoni C., Guazzoni P., Heil M., Heilborn L., Introzzi R., Isobe T., Kezzar K., Kiš M., Krasznahorkay A., Kupny S., Kurz N., La Guidara E., Lanzalone G., Lasko P., Le Fèvre A., Leifels Y., Lemmon R.C., Li Q.F., Lombardo I., Lukasik J., Lynch W.G., Marini P., Matthews Z., May L., Minniti T., Mostazo M., Pagano A., Pagano E.V., Papa M., Pawlowski P., Pirrone S., Politi G., Porto F., Reviol W., Riccio F., Rizzo F., Rosato E., Rossi D., Santoro S., Sarantites D.G., Simon H., Skwirczynska I., Sosin Z., Stuhl L., Trautmann W., Trifirò A., Trimarchi M., Tsang M.B., Verde G., Veselsky M., Vigilante M., Wang Yongjia, Wieloch A., Wigg P., Winkelbauer J., Wolter H.H., Wu P., Yennello S., Zambon P., Zetta L., Zoric M.</i>	
MIXING OF CHARGED AND NEUTRAL BOSE CONDENSATES AT NONZERO TEMPERATURE AND MAGNETIC FIELD	1483
<i>Haber Alexander, Schmitt Andreas</i>	
CONDITIONS FOR THE EXISTENCE OF STABLE STRANGE QUARK MATTER.....	1493
<i>Dondi N.A., Drago A., Pagliara G.</i>	
INVESTIGATION OF THE LOW-ENERGY KAONS HADRONIC INTERACTIONS IN LIGHT NUCLEI BY AMADEUS	1501
<i>Piscicchia K., Cargnelli M., Curceanu C., Del Grande R., Fabbietti L., Marton J., Scordo A., Sirghi D., Tucakovic I., Vazquez Doce O., Wycech S., Zmeskal J., Mandaglio G., Martini M., Moskal P.</i>	
THE FALSIFICATION OF CHIRAL NUCLEAR FORCES	1509
<i>Ruiz Arriola E., Amaro J. E., Navarro Perez R.</i>	
EFFECTS OF INDUCED SURFACE TENSION IN NUCLEAR AND HADRON MATTER.....	1515
<i>Sagun V.V., Bugaev K.A., Ivanytskyi A.I., Oliinychenko D.R., Mishustin I.N.</i>	
HADES EXPERIMENT PROBING BARYONIC MATTER AT SIS18 OVERVIEW OF RESULTS	1523
<i>Salabura Piotr</i>	
PHASES OF DENSE MATTER WITH HOLOGRAPHIC INSTANTONS	1534
<i>Preis Florian, Schmitt Andreas</i>	
EXPERIMENTAL RESULTS ON MULTI-NUCLEONIC K^- ABSORPTIONS IN LIGHT NUCLEI	1543
<i>Vázquez Doce O., Cargnelli M., Curceanu C., Del Grande R., Fabbietti L., Marton J., Piscicchia K., Scordo A., Sirghi D., Tucakovic I., Wycech S., Zmeskal J., Anastasi A., Curciarello F., Czerwinski E., Krzemien W., Mandaglio G., Martini M., Moskal P., Patera V., Perez del Rio E., Silarski M.</i>	

QUARK MATTER EQUATION OF STATE FROM PERTURBATIVE QCD	1550
<i>Vuorinen Aleks</i>	
DYNAMICS OF SEMI-SUPERFLUID FLUXTUBES IN COLOR-FLAVOR LOCKED QUARK MATTER	1559
<i>Alford Mark G., Windisch Andreas</i>	
CHIRAL TRANSPORT OF NEUTRINOS IN SUPERNOVAE	1566
<i>Yamamoto Naoki</i>	
BEYOND WIMPS: THE QUARK (ANTI) NUGGET DARK MATTER	1573
<i>Zhitnitsky Ariel</i>	
COUPLING OF TT^- AND $\gamma\gamma$ WITH A STRONGLY INTERACTING ELECTROWEAK SYMMETRY BREAKING SECTOR	1585
<i>Delgado Rafael L.</i>	
ON A STRONG COUPLING PROPERTY OF QCD	1594
<i>Grandou T.</i>	
ADVECTION OF A PASSIVE SCALAR FIELD BY TURBULENT COMPRESSIBLE FLUID: RENORMALIZATION GROUP ANALYSIS NEAR $D = 4$	1603
<i>Antonov N. V., Gulitskiy N. M., Kostenko M. M., Lucivjanský T.</i>	
THETA ANGLE IN HOLOGRAPHIC QCD	1614
<i>Järvinen Matti</i>	
COMPOSITE HIGGS DYNAMICS ON THE LATTICE	1624
<i>Pica Claudio, Drach Vincent, Hansen Martin, Sannino Francesco</i>	
INTEGRATING OUT RESONANCES IN STRONGLY-COUPLED ELECTROWEAK SCENARIOS	1635
<i>Rosell Ignasi, Pich Antonio, Santos Joaquín, Sanz-Cillero Juan José</i>	
STRONGLY-INTERACTING MIRROR FERMIONS AT THE LHC	1646
<i>Triantaphyllou George</i>	
INFRARED BEHAVIORS OF SU(2) GAUGE THEORY	1656
<i>Tuominen Kimmo</i>	
$N=1$ EULER ANOMALY FROM RG-DEPENDENT METRIC-BACKGROUND	1665
<i>Prochazka Vladimir, Zwicky Roman</i>	
SUM-RULE CONSTRAINTS ON POSSIBLE DIPHOTON RESONANCES AT LHC	1671
<i>Roig P., Sanz-Cillero J.J.</i>	
CLASSIFIERS FOR CENTRALITY DETERMINATION IN PROTON-NUCLEUS AND NUCLEUS-NUCLEUS COLLISIONS	1680
<i>Altsybeev Igor, Kovalenko Vladimir</i>	
EXPERIENCE WITH USING UNFOLDING PROCEDURES IN ATLAS	1690
<i>Biondi Silvia</i>	
A METHOD FOR THE CONSTRUCTION OF STRONGLY REDUCED REPRESENTATIONS OF ATLAS EXPERIMENTAL UNCERTAINTIES AND THE APPLICATION THEREOF TO THE JET ENERGY SCALE	1700
<i>Börner Daniela</i>	
THE PARAMETERS OF THE TSALLIS DISTRIBUTION AT THE LHC	1709
<i>Cleymans J., Azmi M.D., Parvan A.S., Teryaev O.V.</i>	
STATISTICAL SIGNIFICANCE ESTIMATION OF A SIGNAL WITHIN THE GOOFIT FRAMEWORK ON GPUS	1714
<i>Cristella Leonardo, Di Florio Adriano, Pompili Alexis</i>	
COMBINATION OF MEASUREMENTS AND THE BLUE METHOD	1723
<i>Lista Luca</i>	
DEEP LEARNING AND BAYESIAN METHODS	1733
<i>Prosper Harrison B.</i>	
DATA UNFOLDING METHODS IN HIGH ENERGY PHYSICS	1742
<i>Schmitt Stefan</i>	
THE INVERSE BAGGING ALGORITHM: ANOMALY DETECTION BY INVERSE BOOTSTRAP AGGREGATING	1753
<i>Vischia Pietro, Dorigo Tommaso</i>	
THE MATRIX ELEMENT METHOD IN THE LHC ERA	1761
<i>Wertz Sébastien</i>	
BAYESIAN NON PARAMETRIC MODELLING OF HIGGS PAIR PRODUCTION	1768
<i>Scarpa Bruno, Dorigo Tommaso</i>	
FTK: THE HARDWARE FAST TRACKER OF THE ATLAS EXPERIMENT AT CERN	1779
<i>Maznas Ioannis</i>	

FUTURE PERSPECTIVES ON BARYON FORM FACTOR MEASUREMENTS WITH BES III	1788
<i>Schönning Karin, Li Cui</i>	
SIMULATION AND TRACK RECONSTRUCTION TECHNIQUES FOR THE J-PARC MUON G-2 EXPERIMENT	1796
<i>Tsilias Paschalis, Lee Myeong Jae Dr.</i>	
NUMERICAL STUDY OF THE ELECTRON AND MUON LATERAL DISTRIBUTION IN ATMOSPHERIC SHOWERS OF HIGH ENERGY COSMIC RAYS	1808
<i>Georgios Atreidis</i>	
COUPLED CHANNEL MODEL OF THE SCALAR ISOVECTOR MESON PHOTOPRODUCTION	1814
<i>Bibrzycki L., Kaminski R.</i>	
THE QUARK PROPAGATOR IN QCD AND G₂ QCD	1820
<i>Contant Romain, Huber Markus Q.</i>	
ONE-LOOP CALCULATIONS IN SUPERSYMMETRIC LATTICE QCD	1827
<i>Costa M., Panagopoulos H.</i>	
BRANCHING RATIO ESTIMATES OF $T^- \rightarrow \pi^- \eta^{(0)} \nu_T$ DECAYS	1833
<i>Escribano Rafael, González-Solís Sergi</i>	
HOLOGRAPHIC STUDY OF THE QCD MATTER UNDER EXTERNAL CONDITIONS	1837
<i>Katanaeva Alisa, Afonin Sergey</i>	
THE MASS SPECTRUM OF DOUBLE HEAVY BARYONS IN NEW POTENTIAL QUARK MODELS	1843
<i>Kovalenko Vladimir, Puchkov Andrei</i>	
A STUDY ON QUARK-GLUON PLASMA EQUATION OF STATE USING THERMAL QUARK MASS	1849
<i>Kumar Yogesh, Somorendro Singh S.</i>	
GOLDSTONE-TYPE PSEUDOSCALAR MESONS: INSTANTANEOUS BETHE-SALPETER MODELS	1854
<i>Lucha Wolfgang</i>	
STRONG COUPLINGS OF THREE MESONS WITH CHARM(ING) INVOLVEMENT	1861
<i>Lucha Wolfgang, Melikhov Dmitri, Sazdjian Hagop, Simula Silvano</i>	
STUDIES OF Λ_c PRODUCTION IN PP AND P-PB COLLISIONS 1 WITH ALICE AT 2 THE LHC	1866
<i>Meninno Elisa</i>	
STRONGLY INTERACTING MATTER UNDER EXTERNAL MAGNETIC FIELDS WITHIN NONLOCAL NJL-TYPE MODELS	1873
<i>Pagura V.P., Gómez Dumm D., Noguera S., Scoccola N.N.</i>	
CONFINEMENT IN F₄ EXCEPTIONAL GAUGE GROUP USING DOMAIN STRUCTURES	1880
<i>Rafibakhsh Shahnoosh, Shahlaei Amir</i>	
HEAVY QUARK COUPLED CHANNEL DYNAMICS FROM THERMAL SHIFTS	1886
<i>Arriola Enrique Ruiz, Salcedo Lorenzo Luis, Megías Eugenio</i>	
CHARMED MESONS AT FINITE TEMPERATURE AND CHEMICAL POTENTIAL	1892
<i>Serna Fernando E., Krein Gastão</i>	
UNIVERSAL BEHAVIOR OF GLUON AND GHOST PROPAGATORS IN THE INFRARED	1898
<i>Siringo Fabio</i>	
DISPERSION RELATIONS FOR UNPHYSICAL PARTICLES	1905
<i>Siringo Fabio</i>	
HOLOGRAPHIC QCD FOR H-DIBARYON (UDDSS)	1913
<i>Suganuma Hideo, Matsumoto Kohei</i>	
FLOW ANISOTROPY DUE TO MOMENTUM DEPOSITION IN ULTRA-RELATIVISTIC NUCLEAR COLLISIONS	1919
<i>Tomášik Boris, Schulc Martin</i>	
EVENT SHAPE SORTING: SELECTING EVENTS WITH SIMILAR EVOLUTION	1925
<i>Tomášik Boris, Kopečná Renata</i>	
ANALYTIC SOLUTIONS OF TRANSVERSE MAGNETO-HYDRODYNAMICS UNDER BJORKEN EXPANSION	1931
<i>Shi Pu, Yang Di-Lun</i>	
Author Index	