

Anar Rustamov

Curriculum Vitae



Personal Information

Degrees:	Dr. rer. nat. (Darmstadt, Germany, 2006) Dr. of Physics (Habilitation, Baku, Azerbaijan, 2018)
Name, Surname:	Anar Rustamov
Birth:	16.04.1977
Citizenship:	Azerbaijan

Research Interests

Nuclear interactions, Heavy-Ion Phenomenology, Scientific Computing, Data Analysis techniques

Experiments

ALICE (active), CBM (active), HADES(active), NA49, NA61/SHINE

Academic positions

2016-	GSI Helmholtzzentrum für Schwerionenforschung Senior scientist
2016-2016	Ruprecht-Karls-Universität Heidelberg Visiting EMMI professor
2014-2016	Frankfurt Institute for Advanced Studies Scientific researcher (ALICE)
2011-2014	Goethe-Universität Frankfurt Postdoctoral Researcher (NA49, N61/SHINE)
2006-2011	GSI Helmholtzzentrum für Schwerionenforschung Postdoctoral Researcher (HADES)
2003-2006	Technische Universität Darmstadt PhD student
2002-2003	GSI Helmholtzzentrum für Schwerionenforschung Guest scientific researcher
2000-2002	Joint Institute for Nuclear Research, Dubna, Russia Junior Scientific researcher

Education

2003-2006	PhD, Technische Universität Darmstadt “Exclusive η meson reconstruction in p-p collisions at 2.2 GeV with the HADES Spectrometer and and high resolution Tracking” Supervisor: Prof. Dr. Peter Braun-Munzinger Second Referee: Prof. Dr. Jochen Wambach
1998-2000	Baku State University, Baku, Azerbaijan Master degree, Theoretical and Mathematical Physics
1994-1998	Baku State University, Baku, Azerbaijan Bachelor degree, Physics

Scientific Activities

Publications	co-author of about 400 publications
Presentations	About 50 invited plenary talks at international conferences/workshops/seminars, including Quark Matter, Strangeness in Quark Matter, CPOD
Proposed Methods	<ol style="list-style-type: none">Cumulants of multiplicity distributions Phys.Rev.C 86 (2012) 044906 Nucl.Phys.A 1001 (2020) 121915 Nucl. Instrum. Meth. A, 946, 162622 (2019)Fluctuations Nucl. Phys. A, 960, 114–130 (2017) Nucl. Phys. A 1008 (2021) 122141 Nucl. Phys. A 1034 (2023) 122641
External service	Referee of PRL, NPA, JINST, NIM, EPJC, EPJA

Organisational experiences

2016 –	NNRC/ALICE Team Leader
2016 – 2020	PAG Convenor, E-by-E fluctuations, ALICE
2023 –	PWG Convenor, Fluctuations, Flow and Correlations, CBM

- [Chair of the EMMI Rapid Reaction Task Force, Fluctuations and Correlations of conserved charges in nuclear collisions - Challenges and Future Prospects, 6–10 November 2023, GSI, Germany](#)
- [Char of the International conference: Critical Point and Onset of Deconfinement, 15–19 March, 2021, LBNL, USA \(online Zoom\)](#)

- [Co-Chair of the International conference: Critical Point and Onset of Deconfinement, November 28 - December 2, 2022, Yale University, USA \(online Zoom\)](#)
- [Co-organizer of the international Workshop: Critical Fluctuations Near the QCD phase boundary in Relativistic Nuclear Collisions, October 10 -13, 2017, Wuhan, China](#)

Member of the International Advisory Committees

[CPOD, International Workshop: Critical Point and Onset of Deconfinement](#)

Computer Skills

C++, Fortran, Python, CERN-ROOT

Algorithms and Data structures

Numerical Calculations

Monte Carlo Simulations

Analysis of experimental Data (ALICE, HADES, NA49, NA61)

[Graphical User Interface](#)

Languages

Native	Azerbaijan
As Native	Turkish
As Native	Russian
Advanced	English
Advanced	German

List of publications (Principal Author)

1. R. Holzmann, V. Koch, A. Rustamov, J. Stroth,
"Controlling volume fluctuations for studies of critical phenomena in nuclear collisions"
e-Print: [2403.03598](#) [nucl-th]
2. P. Braun-Munzinger, K. Redlich, A. Rustamov, J. Stachel,
"The imprint of conservation laws on correlated particle production"
e-Print: [2312.15534](#) [nucl-th]
3. Co-author of the book
["50 Years of Quantum Chromodynamics"](#)
Eur.Phys.J.C 83 (2023) 1125
4. A. Rustamov, J. Stroth, R. Holzmann
"A model-free procedure to correct for volume fluctuations in E-by-E analyses of particle multiplicities"
Nucl.Phys.A 1034 (2023) 122641
5. P. Braun-Munzinger, A. Rustamov, J. Stachel
"QCD Under extreme conditions; Contribution to the Book in celebration of '50 Years of Quantum Chromodynamics"
e-Print: [2211.08819](#) [hep-ph]
6. P. Braun-Munzinger, B. Friman, K. Redlich, A. Rustamov, J. Stachel
"Relativistic nuclear collisions: Establishing a non-critical baseline for fluctuation measurements"
[Nucl. Phys. A, 1008, 122141 \(2021\)](#)
7. P. Braun-Munzinger, A. Rustamov, J. Stachel
"The role of the local conservation laws in fluctuations of conserved charges"
e-Print: [1907.03032](#) (2019)

8. M. Gazdzicki, M. I. Gorenstein, M. Mackowiak-Pawłowska, A. Rustamov
"Particle-Set Identification method to study multiplicity fluctuations"
[Nucl. Phys. A, 1001, 121915 \(2020\)](#)
9. M. Arslanok, A. Rustamov
"TIdentity module for the reconstruction of the moments of multiplicity distributions"
[Nucl. Instrum. Meth. A, 946, 162622 \(2019\)](#)
10. P. Braun-Munzinger, A. Rustamov, J. Stachel
"Bridging the gap between event-by-event fluctuation measurements and theory predictions in relativistic nuclear collisions"
[Nucl. Phys. A, 960, 114-130 \(2017\)](#)
11. A. Rustamov, J. N. Rustamov
"On the Spiral Structures in Heavy-Ion Collisions"
e-Print: [1602.01812, \(2016\)](#)
12. M. I. Gorenstein, W. Greiner, A. Rustamov
"Strangeness Production in Light and Intermediate size Nucleus-Nucleus Collisions"
[Phys.Lett.B 731, 302-306 \(2014\)](#)
13. A. Rustamov, M. I. Gorenstein
"Identity Method for Moments of Multiplicity Distribution"
[Phys. Rev. C 86, 044906 \(2012\)](#)
14. A. Rustamov (HADES Collaboration)
"Inclusive dielectron spectra in p+p collisions at 3.5 GeV"
[Eur.Phys.J.A 48, 64 \(2012\)](#)
15. A. Rustamov (NA49 Collaboration)
"Phase-space dependence of particle-ratio fluctuations in Pb + Pb collisions from 20 A to 158 A GeV beam energy"
[Phys.Rev.C 89, 5, 054902 \(2014\)](#)

16. A. Rustamov (ALICE Collaboration)

“Global baryon number conservation encoded in net-proton fluctuations measured in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV”

[Phys. Lett. B 807, 135564 \(2020\)](#)

17. A. Rustamov (ALICE Collaboration)

“Closing in on critical net-baryon fluctuations at LHC energies: cumulants up to third order in Pb-Pb collisions”

[Phys.Lett.B 844 \(2023\) 137545](#)

Conference Proceedings

18. “Deciphering the phases of QCD matter with fluctuations and correlations of conserved charges”

Contribution to: [Strangeness in Quark Matter \(SQM 2022\)](#)

Published in: e-Print: [2210.14810](#) [hep-ph], EPJ in print

19. “Establishing a non-critical baseline for fluctuation observables”

Contribution to: [Criticality in QCD and the Hadron Resonance Gas](#)

20. “Overview of fluctuation and correlation measurements”

Contribution to: [Quark Matter 2019](#)

Published in: Nucl. Phys. A, 1005, 121858 (2021)

21. Experimental results on fluctuations of conserved charges confronted with predictions from canonical thermodynamics”

Contribution to: [Quark Matter 2018](#)

Published in: Nucl. Phys. A, 982, 307–310 (2019)

22. “Energy dependence of strangeness production and event-by-event fluctuations”

Contribution to: [SQM 2017](#)

Published in: EPJ Web Conf. 171, 02003 (2018)

23. “Net-baryon fluctuations measured with ALICE at the CERN LHC”

Contribution to: [Quark Matter 2017](#)

Published in: Nucl.Phys.A 967, 453-456 (2017)

24. "Multiplicity fluctuations of identified hadrons in central Pb+Pb collisions at the CERN SPS"
Contribution to: [CPOD 2013](#)
Published in: PoS CPOD2013, 005 (2013)
25. "Results from the NA61/SHINE and NA49 experiments"
Contribution to: [Quark Matter 2012](#)
Published in: Nucl.Phys.A 904-905, 915c-918c (2013)
26. "Dilepton and strangeness production probed with HADES"
Contribution to: [CPOD 2010](#)
Published in: Phys.Atom.Nucl. 75, 576-579 (2012)
27. A. Rustamov
"The Horn, Kink and Step, Dale: from few GeV to few TeV"
Published in: [Central Eur.J.Phys. 10, 1267-1270 \(2012\)](#)
28. "Dilepton production studied with the HADES spectrometer"
Contribution to: [MESON 2010](#)
Published in: Int.J.Mod.Phys.A 26, 384-389 (2011)
29. "Inclusive meson production in 3.5-GeV p p collisions studied with the HADES spectrometer"
Contribution to: [Hadron 2009](#)
Published in: AIP Conf.Proc. 1257, 1, 736-740 (2010)

Full list of publications

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[Google Scholar](#)