Claudia Ratti
University of Houston

Curriculum Vitae

Claudia Ratti
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EDUCATION AND TRAINING

- University of Torino(Italy)	Physics	PhD	2003
Research Advisor: Professor Wanda M Alberico			
- University of Torino (Italy)	Physics	MS	1999

PROFESSIONAL APPOINTMENTS

Professor of Physics	University of Houston	09/2022 - Now
Physics Department Associate Chair	University of Houston	2019-Now
Associate Professor (Tenured)	University of Houston	2017-2022
Assistant Professor	University of Houston	2014-2017
Assistant Professor	University of Torino	2010-2014
Postdoctoral Fellow	University of Wuppertal Advisor: Prof. Zoltan Fodor	2009-2010
Postdoctoral Fellow	SUNY at Stony Brook Advisor: Prof. Edward Shuryak	2007-2009
Postdoctoral Fellow	ECT* Trento (Advisor: Prof. J.-P. Blaizot)	2005-2007
Postdoctoral Fellow	Technical University Munich Advisor: Prof. Wolfram Weise	2003-2005

HONORS AND AWARDS

2021	Fellow of the American Physical Society
2020	Sigma-Xi honor society full member
2020	University of Houston 50 in 5 Scholar – High impact scientific publications
2019	University of Houston Research Excellence Award at the associate professor level
2017	NSF CAREER Award
2016	European Physical Journal Keynote Speaker Award at the conference “Extreme QCD”
2012	Italian Academy of Science Prize “Giuseppe Borgia” for best Italian Physicist below 35, awarded by the President of the Italian Republic: €10,000
2011	Zonta Intl. Prize for best Woman in Science below 35 in Italy and Monaco: €5,000
2003	INFN (National Institute of Nuclear Physics) Postdoctoral Fellowship
1999	Best Physics Student Award, University of Torino
1999	Best Physics Thesis Award, University of Torino

RESEARCH INTERESTS AND EXPERTISE

- Thermodynamics of QCD from first principles: I am a member of the Wuppertal-Budapest-Houston lattice QCD collaboration. We published several important results, such as the equation of state of QCD for 2+1 dynamical quark flavors at zero and finite chemical potential, the transition line for deconfinement, fluctuations of conserved charges at zero and finite chemical potential.

- Phenomenology of the Quark Gluon Plasma (QGP): I developed several phenomenological models for QGP physics for these purposes:

- build a bridge between heavy-ion collision experimental data and lattice QCD results;
- provide an interpretation of the lattice data in terms of effective degrees of freedom;
- access regions of the phase diagram which cannot be studied on the lattice;
- compute dynamical quantities in real time, such as QGP viscosity.

They include the PNJL model (I am first author of one of the pioneering works on the subject, with ~1000 citations), the quasiparticle model, the Hadron Resonance Gas model.

- **QCD Equation of State with a critical point**: this part of my research activity is based on the idea of combining the QCD equation of state from the lattice, to an Ising-model-based approach, which correctly reproduces the scaling behavior of the equation of state of strongly interacting matter in the vicinity of the critical point.
- **AdS/CFT correspondence for strongly interacting matter:** we have developed a string-theory based approach that reproduces lattice QCD thermodynamics at zero and finite chemical potential, naturally incorporates the feature of ideal fluidity of the QGP and predicts a critical point in the phase diagram of strongly interacting matter. We are currently using this approach to calculate the QCD equation of state at unprecedentedly high densities.

RESEARCH PERFORMANCE

-**Research funding:** Research Grants funded by: National Science Foundation (NSF), US Department of Energy (DoE), NASA, Italian Ministry of Education University and Research (MIUR), INFN, Deutsche Forschungsgemeinschaft (see details below).

- **Publications: 92 publications** in refereed international journals, of which *4 renowned papers* (500+ citations), *3 famous papers* (250-499 citations), *19 very well-known papers* (100-249 citations), *10 well-known papers* (50-99 citations). **1 book, 1 book contribution**, 55 conference proceedings. **Total citations:** ~12100, **h-index:** 48 (source: Google scholar) (see details below)

- **Talks:** *107 talks* at international conferences (of which 57 invited and 9 plenary talks at the most important conferences in the field), *61 invited seminars* at International Universities and Institutes (of which 21 colloquia), *9 cycles of lectures* at International Schools (see details below)

- **Career supervision:** Currently supervising seven Ph.D. Students, and one undergraduate student; previously: three Ph.D. student, three postdocs, twelve undergraduate students (see details below)

FUNDING

Individual grants (federal, peer reviewed)

2024-27 PI of NASA-funded grant “Strange quarks in the cosmos”. Project funding: $596,876.

2023-26 PI of DoE-funded grant "NuSTEAM – Nuclear Science in Texas to Enhance and Advance Minorities". Collaborative grant between four institutions, of which UH is the leading one. Total funding: $1.36M, of which $485,000 for UH.

2022-25 PI of NSF-funded project "Properties of strongly interacting matter at finite density from first principles". Project funding: $300,000.

2021-26 Spokesperson and Co-PI of the NSF-funded CSSI (Cyber Infrastructure for Sustained Scientific Innovation) grant "MUSES (ModUlar Solver for the Equation of State)". Project funding for UH: $552,000.

2021-26 Co-PI of NSF-funded Focused Research Hub in nuclear astrophysics "NP3M: Nuclear Physics from Multi-Messenger Mergers". Project funding for UH: $509,000.

2021-23 PI of DoE-funded grant "NuSTEAM – Nuclear Science in Texas to Enhance and Advance Minorities". Collaborative grant between four institutions, of which UH is the leading one. Total funding: $500,000, of which $200,000 for UH.

2022 Supplement to the NSF CAREER award: $55,000.

2021-22 Supplement to the NSF CAREER award: $55,000.

2020-22 Supplement to the NSF CAREER award: $5,000.

2020-22 Supplement to the NSF CAREER award: $32,000.

2020-22 Supplement to the NSF CAREER award: $55,000.

2020-21 PI of UH GEAR grant (Grants to Enhance and Advance Research): $31,000.

2019-22 Supplement to the NSF CAREER award: $30,000.

2017-22 Sole PI of the NSF CAREER award *"Properties of strongly interacting matter from lattice QCD"*. Project funding: $475,000.

2015-17 Sole PI of the NSF grant "*Crossover phenomena in the deconfinement transition of QCD on the lattice and in heavy-ion collisions at RHIC and the LHC*". Project funding: $240,000.

2016-21 Co-PI and co-founder of the Beam Energy Scan Theory (BEST) Collaboration (12 U.S. Institutions) funded by the Department of Energy (DOE) from March 2016 on. Project funding for UH: $120,000.

2010-14 Co-PI (Coordinator of the Torino Research Unit (7 members)) of the "Future in research" project (FIRB), granted by the Italian Ministry of Education, University and Research (MIUR) on heavy ion physics at the LHC (~3800 applications, ~100 projects funded). Project funding: € 629,000, equally shared between Catania and Torino Universities.

Grants as member of research groups in which I had a major role

2010-14 Member of research group RM31 *"Physics of heavy ion collisions at very high energy and quark-gluon plasma*", funded by INFN (4-year funding, €140,000)

2009-10 Member of the Deutsche Forschungsgemeinschaft grant SFB-TR 55

2007-09 Member of the US Department of Energy Grant DE-FG03-97ER4014

2006 Member of PRIN grant "QCD Phases: theory and phenomenology", funded by MIUR (2-year funding, €258,000)

2005-07 Co-PI (Trento coordinator) of the INFN-project RM31 "*Physics of Heavy Ion Collisions at High Energy and Quark-Gluon Plasma*"(PI: Luciano Maiani)

Computational awards

2024-26 *co-PI of* DOE-INCITE large scale computational project for lattice QCD.

2020 PI of DOE-INCITE large scale computational project for lattice QCD: 510,000 node hours on the SUMMIT supercomputer at Oak Ridge National Laboratory (USA).

2016-17 PI of DOE-INCITE large scale computational project for lattice QCD: 240 million core hours on the Mira Bluegene/Q supercomputer at Argonne National Laboratory (USA).

2015 Co-PI of DOE-INCITE large scale computational project for lattice QCD: 150 million core hours on the Mira Bluegene/Q supercomputer at Argonne National Laboratory (USA).

2014 Co-PI of DOE-INCITE large scale computational project for lattice QCD: 120 million core hours on the Mira Bluegene/Q supercomputer at Argonne National Laboratory (USA).

2012 Co-PI of PRACE large scale computational project for lattice QCD: 93 million core hours on the Juqueen Bluegene/Q supercomputer (Juelich- Germany).

SUPERVISION ACTIVITY

Graduate students

- Jonathan Gonzales (1st year Ph.D. student, expected to graduate in May 2028)
- Prachi Garella (2nd year Ph.D. student, expected to graduate in May 2027)
- Musa Rahim Khan (2nd year Ph.D. student, expected to graduate in May 2027)
- Hitansh Shah (3rd year Ph.D. student, expected to graduate in May 2026)
- Ahmed Abuali (3rd year Ph.D. student, expected to graduate in May 2026)
- Michael Kahangirwe (4th year Ph.D. student, expected to graduate in May 2025)
- Gabriel Frohaug (4th year Ph.D. student, expected to graduate in May 2025)
- Joaquin Grefa (graduated in May 2023, currently postdoctoral researcher at Kent State University)
- Angel Nava (graduated in May 2023)
- Jamie Karthein (graduated in December 2021), currently postdoctoral researcher at MIT
- Paolo Parotto (graduated in May 2019) currently assistant professor at Torino University (Italy). His thesis got the 2020 RHIC Thesis award.
- Israel Portillo (graduated in May 2019), Instructional Faculty at the University of Houston
- Paolo Alba (graduated in January 2016), postdoctoral researcher at the University of Frankfurt till 06/2018, currently working for a consulting company

Undergraduate students

- Seth Trabulsi (Senior)

2014-22 Michael Trujillo, Jonathan Gonzales, Alejandro Florez, Janita Hussain, Damien Price, Debora Mroczek (her honors thesis got the Senior Honors Thesis Award in the college of Natural Sciences and Mathematics, she received the NSF Graduate Research Fellowship and the Barry Goldwater award), Cassandra Little, Aaron Boggs, Bayal Rehman, Jonathon Bialas, Jacob Rose (his honors thesis got the Senior Honors Thesis Award in the college of Natural Sciences and Mathematics)

2010-14 Co-supervisor of 6 Undergraduate students at Torino University (Daniele Pastis, Paolo Parotto, Alessandro Nada, Davide Piagneri, Salvatore Dalia, Emanuele Maunero)

Postdoctoral researchers

2022-Now Konstantin Maslov, Johannes Jahan, Joaquin Grefa

2015-2017: Jacquelyn Noronha-Hostler, currently assistant professor at the University of Illinois at Urbana-Champaign (USA)

2014-2015: Valentina Mantovani Sarti, currently postdoctoral researcher at the Technical University of Munich (Germany)

2013-2014: Marcus Bluhm, currently researcher at the University of Nantes (France)

TEACHING EXPERIENCE

Fall 2023 Physics 6313: Methods of Mathematical Physics 1 for graduate students. Univ. Houston (teaching evaluation: 4.85/5, significantly above department average of 3.8)

Spring 2023 Physics 6316: Quantum Mechanics 2 for graduate students. Univ. Houston (teaching evaluation: 4.7/5, significantly above department average of 3.8)

Fall 2022 Physics 6315: Quantum Mechanics 1 for graduate students. Univ. Houston (teaching evaluation: 4.1/5, significantly above department average of 3.8)

Spring 2022 Physics 7397: Advanced Quantum Field Theory for graduate students. Univ. Houston (teaching evaluation: 4.25/5, significantly above department average of 3.64)

Fall 2021 Physics 6303: Methods of Mathematical Physics 1 for graduate students: Univ. Houston (teaching evaluation: 4.61/5, significantly above department average of 3.71)

July 2021 Summer training program for minorities in Nuclear Physics within the DoE-funded NuSTEAM project (90 hours). University of Houston

June 2021 Graduate course (11 hours) on “Non-perturbative field theory: renormalization group and aspects of strong interactions” for the University of Catania (Italy) (virtual on Zoom)

Spring 2021 Physics 6316: Quantum Mechanics 2 for graduate students. Univ. Houston (teaching evaluation: 4.69/5, significantly above department average of 3.7)

Dec. 2020 Cycle of lectures (3 hours) on “QCD phase diagram” at the 2020 Dublin Lattice QCD School (virtual on Zoom)

Fall 2020 Physics 7316: Quantum Field Theory for graduate students. Univ. Houston (teaching evaluation: 4.73/5, significantly above department average of 3.64)

Spring 2020 Physics 4356: Particle Physics for undergraduate students. Univ. Houston (teaching evaluation: 4.75/5, significantly above department average of 3.63)

Fall 2019 Physics 1301: General Physics 1. Univ. Houston (teaching evaluation: 4.1/5, significantly above department average of 3.75)

July 2019 Cycle of lectures (6 hours) on "QCD phase diagram" at the Mainz Institute for Theoretical Physics summer school on "Non-Perturbative Phenomena and the early Universe"

Spring 2019 Physics 4356: Particle Physics for undergraduate students. Univ. Houston (teaching evaluation: 4.85/5, significantly above department average of 3.92)

Fall 2018 Physics 7316: Quantum Field Theory for graduate students. Univ. Houston (teaching evaluation: 4.31/5, significantly above department average of 3.92)

June 2018 Cycle of lectures (12 hours) on "QCD thermodynamics" at the ECT* Doctoral training program on "QCD under extreme conditions"

Spring 2018 Physics 6316: Quantum Mechanics 2 for graduate students. Univ. Houston (teaching evaluation: 4.78/5, significantly above department average of 3.8)

Oct. 2017 Lecture at the international QGP school in Beijing, China

Fall 2017 Physics 6315: Quantum Mechanics 1 for graduate students. Univ. Houston (teaching evaluation: 4.6/5, significantly above department average of 3.8)

Spring 2016 Physics 6316: Quantum Mechanics 2 for graduate students. Univ. Houston (teaching evaluation: 4.56/5, significantly above department average of 3.58)

Fall 2015 Physics 6315: Quantum Mechanics 1 for graduate students. Univ. Houston (teaching evaluation: 4.51/5, significantly above department average of 3.73)

Spring 2015 Physics 1301: General Physics 1. Univ. Houston (teaching evaluation: 4.03/5, significantly above department average of 3.38)

August 2014 Lecture at the School "International Mons Meeting on Nuclear Physics"

May 2014 Lecture on QCD thermodynamics and fluctuations at the student day of the International Conference "Quark Matter 2014"

2014 Tutoring of the course "Electromagnetism and Optics", Torino University

2013 Tutoring of the course "Waves, Fluids and Thermodynamics", Torino Univ.

2011-14 Course on "Physics of the Quark-Gluon Plasma" for Ph.D. Students, Torino University

March 2011 Cycle of Lectures "Thermodynamics of the Quark-Gluon Plasma" at the International School "Quark-Gluon Plasma and Heavy Ion Collisions: Past, Present and Future", Torino, 7-12 March 2011

2011-12 Tutoring for the course "Mathematical Methods for Physics", Torino Univ.

2007-2008 Nuclear Physics II and Quantum Mechanics at Stony Brook University

SERVICE FOR THE COMMUNITY

Service at the University of Houston

2022-2023 Member of Search committee for Condensed Matter Theory Assistant Professor

2022 Member of NSM College Strategic Planning Committee

2021-2022 Chair of Search committee for Nuclear Theory Assistant Professor

2021 Chair of Departmental Hiring Plan Committee

08/2019- now Associate Chair of the Physics Department. Ex officio member of all Dept. Committees

06-07/2019 Chair of the Department Graduate Studies Committee

2018-2019 Member of the Policies Committee of the College of Natural Sciences and Mathematics

2018 Member of the Research Excellence Award Committee

2017-2020 Member of the Graduate and Professional Studies Committee of the Faculty Senate

2017-2020 Member of the Graduate Policies Committee of the Faculty Senate

2017-2020 Member of the UH Faculty Senate

2017-18 Member of the search committee for a Statistical Mechanics assistant prof.

2017-18 Graduated from the Provost's Cougar Chair Leadership Academy

2017-19 Chair of the Physics Department Undergraduate Scholarship Committee

2016-19 Member of the Physics Department Graduate Studies Committee

2016-18 Member of the Physics Department Colloquium Committee

Since 2016 Member of 20 Ph.D. committees

2015-16 Member of the search committee for a Cond. Matter Theory assistant prof.

2015 Member of the search committee for a Cosmology assistant professor

2015 Organizer of the “Graduate student research day”

Since 2015 Organizer of the “Women in Physics day”

Organization of International Meetings

2023 Co-Chair, Quark Matter 2023, Houston (~650 participants)

Since 2022 Member of the International Advisory Committee of the International Conference “Strangeness in Quark Matter” (~200 participants)

Since 2021 Member of the International Advisory Committee of the International Conference “Lattice” (~500 participants)

2020 Co-Chair of the International Conference “From heavy ion collisions to neutron stars”, virtual meeting on Zoom

2020 Co-Chair of the International Conference “Hard Probes 2020”, virtual meeting on Zoom

Since 2020 Co-Organizer of the Winter Workshop on Nuclear Dynamics (~60 participants)

2019-2021 Co-Organizer of Nuclear Physics Journal Club (http://nsmn1.uh.edu/cratti/seminars2.html)

2019 Co-Organizer of the “International Symposium on Multiparticle Dynamics”, Santa Fe (NM)

2019 Co-Convener of the “Diversity and Career” workshop at the RHIC & AGS user's meeting

2018 Co-Convener of the “Heavy ion” session at the LHCP2018 International Conference

2017 Co-convener of the “Finite baryon density” session at the RHIC & AGS user's meeting

Since 2016 Member of the International Advisory Committee of the International Conference “Quark Matter” (~900 participants)

2016 Organizer of the International Workshop YSTAR2016 (Excited Hyperons in QCD Thermodynamics at freeze-out), Jlab, 16-17 Nov. 2016

2015 Convener of the Resonance Session at the International Conference “Strangeness in Quark Matter 2015”

2013-2015 Organizer of the bi-annual International School "Quark-Gluon Plasma and Heavy Ion Collisions: past, present, future" (~60 participants)

Since 2012 Founding organizer of the Intl. Conference “Fairness” (~50 participants)

2011-2015 Member of the International Advisory Committee of the International Conference “Extreme QCD” (~50 participants).

Editorial activity

2021 Co-Editor of the proceedings of the International Conference “Hard Probes 2020”, PoS(HardProbes2020)193, Proceedings of Science (2021)

2020 Co-Editor of the proceedings of the International Conference “Fairness 2019”, J.Phys. Conf. Ser. 1667 (2020)

2020 Co-Editor of the proceedings of the 36th Winter Workshop on Nuclear Dynamics, J.Phys. Conf. Ser. 1602 (2020)

2020 Co-Editor of the proceedings of the 49th International Symposium on Multiparticle Dynamics, EPJ Web Conf. 235 (2020)

Since 2018 Member of the Editorial Board of the International Journal “Universe”

2018 Co-Editor of the proceedings of the International Conference “Fairness 2017”, IoP

2017 Co-Editor of the “Workshop on Excited Hyperons in QCD Thermodynamics at Freeze-Out (YSTAR2016) Mini-Proceedings”

2016 Co-Editor of the proceedings of the International Conference “Fairness 2015”, IoP

2015 Co-Editor of the proceedings of the International Conference “Fairness 2014”, IoP

2014 Co-Editor of the proceedings of the International Conference “Fairness 2013”, IoP

2013 Co-Editor of the proceedings of the International Conference “Fairness 2012”, edited by IoP, Published in J.Phys.Conf.Ser. 426 (2013).

Service for U.S. National Laboratories

Since 2022 Member of RHIC/AGS Program Advisory Committee (PAC)

2018 Member of RHIC users thesis award committee

2018 Member of the RHIC users merit award committee

2016-2019 Elected Member of RHIC Users Executive Committee

Program reviewer

2022-Now Member of the International Scientific Advisory Committee of the Hessian Excellence Cluster “Elements”;

2022-Now Member of the Scientific Advisory Committee of the Cosmic Explorer Telescope;

- Panelist for the National Science Foundation (NSF);

- Reviewer for the US Department of Energy (DOE), NSF, UK Science and Technology Facilities County, Czech Science Foundation, Austrian Science Fund (FWF), ISCRA Italian Supercomputing Resource Allocation, Italian Ministry of University and Research, Deutsche Forschungsgemeinschaft (DFG), Polish National Science Centre.

Service for the American Physical Society (APS)

2022-Now Member of DNP program committee
2022 Vice Chair of DNP Fellowship Committee
2020 Chair of the Hyer Award committee, Texas Section of APS
2020 Best talk committee members, Texas Section of APS
Since 2020 Faculty advisor of the Women in Physics Association at UH, funded by APS
2019 Best talk committee member, Texas Section of APS
Since 2018 Reviewer of Undergraduate contributions at the APS DNP meeting

Outreach

2024 Visit to Memorial Goose Creek High School
2023 Talk for visiting High School Students at the University of Houston
2022 Visit to Chavez High School
2020 Co-PI of UH grant to increase success of Latino Students at UH
Since 2020 Faculty advisor for the Women in Physics Association
Since 2020 Faculty advisor for the Graduate Women Association
Feb. 2020 UH representative at the 8th annual World of Science event, Austin High School
2020 Developer of UH Physics Department Brochure for undergraduate recruitment
2019 Physics Department Representative at the UH booth for the Houston Energy day
Since 2019 Administrator of the Physics Department Twitter account (@UHPhysics)
2018 Instructor in the STEP program for high school teachers at UH
Since 2018 Webmaster of the UH Women in Physics Webpage
2018 Talk at the Houston Dulles High School's Girls in STEM club
2018 Talk at the STEM Youth Career Development Fair
2018 Judge at the 2018 High School Science Fair, University of Houston
2017-18 External Mentor for high school student on the research project “Visualization of lattice QCD configurations with Paraview”
2016-17 External Mentor for high school student on the research project “Development of the multi-verse hypothesis”
2016 Judge at the 2016 Undergraduate Research Day
2016 Instructor in the STEP program for high school teachers at UH
2015 Physics Representative at the UH booth for the Houston Energy day
2015 Outreach activity for girls up to 5th grade (Girls Inc. Spring Camp)
2015 Judge at High School Science fair, University of Houston
2015 Invited Public Lecture at UH Victoria
2014 Masterclass on “Elementary particle physics” for High School Students, Torino University

2014 Public Lecture on "*Quark-Gluon Plasma Physics at the LHC"* for High School Students, Torino University

2013 Lecture "*Recreating the big-bang in the laboratory*" at the Asti High School

2011 Public Lecture "*Re-creating the big-bang in the laboratory"* organized by the Associazione Amici del Festival della Scienza, Genova (Italy)

2001 Co-author of the CD-Rom *"Physics of everyday life"* Enclosed to the book "*Let us explore physics"* for High Schools, Edited by Casa Editrice SEI

Referee for international journals

Physical Review C and D (6/year), Journal of Physics (5/year), Nuclear Physics A, European Physical Journal C, JHEP, Physics Letters B (2/year), Physical Review Letters, Physical Review X (1/year).

BOOKS

C. Ratti, R. Bellwied, The deconfinement transition of QCD: Theory Meets Experiment.
Lecture notes in Physics 981 (2021), 214 pages.

TOP-CITED PUBLICATIONS (source: Google Scholar)

1. S. Borsanyi et al., Is there still any T_C mystery in lattice QCD? Results with physical masses in the continuum limit III, JHEP 1009, (2010) 073. **1215 citations**
2. S. Borsanyi et al., The QCD equation of state with dynamical quarks, JHEP 1011, (2010) 077. **1200 citations**
3. C. Ratti, M. Thaler, W. Weise, Phases of QCD: Lattice thermodynamics and a field theoretical model, Phys. Rev. D73 (2006) 014019. **1029 citations**
4. S. Roessner, C. Ratti, W. Weise, Polyakov loop, diquarks and the two-flavor phase diagram, Phys. Rev. D75 (2007) 034007. **624 citations**
5. S. Borsanyi et al., Fluctuations of conserved charges at finite temperature from lattice QCD, JHEP 1201, (2012) 138. **429 citations**
6. S. Borsanyi et al., QCD equation of state at nonzero chemical potential: continuum results with physical quark masses at order mu^2, JHEP 1208, (2012) 053. **307 citations**
7. A. Beraudo, J.-P. Blaizot, C. Ratti, Real and imaginary-time QQ correlators in a thermal medium, Nucl. Phys. A806 (2008) 312. **287 citations**
8. H. Hansen et al., Mesonic correlation functions at finite temperature and density in the Nambu–Jona-Lasinio model with a Polyakov loop, Phys. Rev. D75 (2007) 065004. **251 citations**
9. S. Borsanyi et al., Freeze-out parameters: lattice meets experiment, Phys. Rev. Lett. 111 (2013) 062005. **231 citations**
10. P. Alba et al., Freeze-out conditions from net-proton and net-charge fluctuations at RHIC, Phys. Lett. B738 (2014) 305. **227 citations**
11. R. Bellwied et al., The QCD phase diagram from analytic continuation, Phys. Lett. B751 (2015) 559. **225 citations**
12. R. Bellwied et al., Is there a flavor hierarchy in the deconfinement transition of QCD?, Phys. Rev. Lett. 111 (2013) 202302. **206 citations**

13. R. Bellwied et al., Fluctuations and correlations in high temperature QCD, Phys. Rev. D92 (2015) 114505. **210 citations**

14. S. Roessner et al., The chiral and deconfinement crossover transitions: PNJL model beyond mean field. Nucl. Phys. A814 (2008) 118. **175 citations**

15. S. Borsanyi et al., Freeze-out parameters from electric charge and baryon number fluctuations: is there consistency?, Phys.Rev.Lett.113 (2014) 052301. **179 citations**

16. C. Ratti et al., Thermodynamics of the PNJL model, EPJ C49 (2007) 213. **167 citations**

17. S. Plumari et al., Recent thermodynamic results from lattice QCD analyzed within a quasi-particle model. Phys. Rev. D84 (2011) 094004. **137 citations**

18. S. Borsanyi et al., Higher order fluctuations and correlations of conserved charges from lattice QCD, JHEP 1810 (2018) 205. **128 citations**

19. S. Borsanyi et al., The QCD crossover at finite chemical potential from lattice simulations, Phys. Rev. Lett. 125 (2020) 052001. **175 citations**

20. C. Ratti, W. Weise, Thermodynamics of two-color QCD and the Nambu Jona-Lasinio model. Phys. Rev. D70 (2004) 054013. **126 citations**

21. C. Ratti, Lattice QCD and heavy ion collisions: a review of recent progress, Reports on Progress in Physics 81 (2018) n.8, 084301. **158 citations**

22. C. Ratti, S. Roessner, W. Weise, Quark number susceptibilities: lattice QCD versus PNJL model. Phys. Lett. B649 (2007) 57. **121 citations**

23. J. Gunther et al., The QCD equation of state at finite density from analytical continuation, Nucl. Phys. A967 (2017) 720. **111 citations**

24. P. Alba et al., Constraining the hadronic spectrum through QCD thermodynamics on the lattice, Phys. Rev. D96 (2017) 034517. **100 citations**

25. R. Critelli et al., Critical point in the phase diagram of primordial quark-gluon matter from black hole physics, Phys. Rev. D96 (2017) n.9, 096026. **89 citations**

26. Rougemont et al., Dynamical vs equilibrium properties of the QCD phase transition: A holographic perspective, Phys. Rev. D96 (2017) n.1, 014032. **77 citations**

27. M. Nahrgang et al., Impact of resonance regeneration and decay on the net-proton fluctuations in a hadron resonance gas, Eur. Phys. J. C75 (2015) 573. **73 citations**

28. C. Ratti et al., Are there hadronic bound states above the QCD transition temperature?, Phys. Rev. D85 (2012) 014004. **72 citations**

29. A. Dainese et al., Heavy ions at the Future Circular Collider, CERN Yellow Report (2017) 635. **71 citations**

30. P. Alba et al., Effect of the QCD equation of state and strange hadronic resonances on multiparticle correlations in heavy ion collisions, Phys. Rev. C98 (2018) 034909. **69 citations**

31. B. Betz et al., Cumulants and nonlinear response of high p_T harmonic flow at $\sqrt{s_{NN}}$ = 5.02 TeV, Phys. Rev. C95 (2017) 044901. **67 citations**

32. C. Ratti, E. Shuryak, Role of monopoles in a gluon plasma. Phys. Rev. D80 (2009) 034004. **60 citations**

33. P. Parotto et al.,QCD equation of state matched to lattice data and exhibiting a critical point singularity, Phys. Rev. C101 (2020) 034901. **57 citations**

34. A. Sorensen et al., Dense nuclear matter equation of state from heavy-ion collisions, Prog. Part. Nucl. Phys. 134 (2024) 104080 **53 citations**

35. P. Alba et al., Sensitivity of multiplicity fluctuations to freeze-out conditions in heavy ion collisions, Phys. Rev. C92 (2015) 064910. **51 citations**

OTHER PEER-REVIEWED PUBLICATIONS

57. R. Rougemont et al., Hot QCD phase diagram from holographic Einstein-Maxwell-Dilaton models, Prog. Part. Nucl. Phys. 135 (2024) 104093 **12 citations**

56. G. Aarts et al., Phase Transitions in Particle Physics: Results and Perspectives from Lattice Quantum Chromo-Dynamics, Prog. Part. Nucl. Phys. 133 (2023) 104070 **37 citations**

55. T. Dore et al., Critical lensing and kurtosis near a critical point in the QCD phase diagram in and out of equilibrium, Phys. Rev. D106 (2022) 094024 **16 citations**

54. C. Ratti, Equation of state for QCD from lattice simulations, Prog. Part. Nucl. Phys. (2022) 104007

53. D. Mroczek et al., Mapping out the thermodynamic stability of a QCD equation of state with a critical point using active learning, Phys. Rev. C107 (2023) 054911 **12 citations**

52. J. Grefa et al., Transport coefficients of the quark-gluon plasma at the critical point and across the first-order line, Phys. Rev. D106 (2022) 034024. **13 citations**

51. S. Borsanyi et al., Resummed lattice QCD equation of state at finite baryon density: strangeness neutrality and beyond, Phys. Rev. D105 (2022) 114504. **7 citation**

50. X. An et al., The BEST framework for the search for the QCD critical point and the chiral magnetic effect, Nucl. Phys. A1017 (2022) 122343. **49 citations**

49. J. M. Karthein, V. Koch, C. Ratti, V. Vovchenko, Constraining the hadronic spectrum and repulsive interactions in a hadron resonance gas via fluctuations of conserved charges, Phys. Rev. D104 (2021) 9, 094009. **10 citations**

48. J. M. Karthein et al., Strangeness neutral equation of state for QCD with a critical point, Eur. Phys. J. Plus 136, 621 (2021). **25 citations**

47. E. McLaughlin et al., Smooth matching of q-hat from hadronic to quark and gluon degrees of freedom, arXiv: 2103.03329.

46. E. McLaughlin et al., Building a testable shear viscosity across the QCD phase diagram, Phys. Rev. C105 (2022) 2, 024903. **10 citations**

45. J. Grefa et al., Hot and dense quark-gluon plasma thermodynamics from holographic black holes, Phys. Rev. D104 (2021) 034002. **16 citations**

44. R. Bellwied et al., Corrections to the hadron resonance gas from lattice QCD and their effect on fluctuation-ratios at finite density, Phys. Rev. D104 (2021) 9, 094508. **10 citations**

43. S. Borsanyi et al., Lattice QCD equation of state at finite chemical potential from an alternative expansion scheme, Phys. Rev. Lett.126 (2021) 232001. **34 citations**

42. J. N. Guenther et al., The crossover line in the (T, μ)-phase diagram of QCD, Nucl. Phys. A1005 (2021), 121782.

41. V. Dexheimer et al., Future Physics perspectives on the equation of state from heavy-ion collisions to neutron stars, J. Phys. G 48 (2021) 7, 073001. **25 citations**

40. D. Mroczek et al., Quartic cumulant of baryon number in the presence of QCD critical point, Phys. Rev. C103 (2021) 034901. **22 citations**

39. P. Alba et al., Chemical freeze-out parameters of net-kaons in heavy-ion collisions, Nucl. Phys. A1005 (2021) 121865.

38. P. Alba et al., Influence of hadronic resonances on the chemical freeze-out in heavy-ion collisions, Phys. Rev. C101 (2020) 054905. **21 citations**

37. R. Bellwied et. al., Off-diagonal correlators of conserved charges from lattice QCD and how to relate them to experiment, Phys. Rev. D101 (2020) 034506. **41 citations**

36. J. Noronha-Hostler et al., Lattice-based equation of state at finite baryon number, electric charge and strangeness chemical potentials, Phys. Rev. C100 (2019) 064910. **29 citations**

35. Z. Fodor et al., Trying to constrain the location of the QCD critical endpoint with lattice simulations, Nucl. Phys. A982 (2019) 843. **23 citations**

34. C. Ratti et al., Analysis of Kaon fluctuations from the beam energy scan at RHIC, Nucl. Phys. A982 (2019) 799. **1 citation**

33. S. Borsanyi et al.,Towards the equation of state at finite density from the lattice, Nucl. Phys. A982 (2019) 223. **7 citations**

32. J. Guenther et al., Cross-correlations of conserved charges from the lattice, Nucl. Phys. A982 (2019) 303.

31. R. Bellwied et al., Freeze-out temperature from net-Kaon fluctuations at energies available at the BNL Relativistic Heavy Ion Collider, Phys. Rev. C99 (2019) 034912. **49 citations**

30. J. Noronha-Hostler, C. Ratti, Signatures of thermalized charm quarks in all charged flow observables, arXiv: 1804.10661, submitted to Phys. Rev. Lett.. **3 citations**

29. A. Pasztor et al., High statistics lattice study of stress tensor correlators in pure SU(3) gauge theory, Phys. Rev. D98 (2018) n.1, 014512. **26 citations**

27. R. Bellwied et al., Lattice QCD thermodynamics up to the perturbative regime, Nucl. Phys. A967 (2017) 732.

26. J. Noronha-Hostler et al., Kaon fluctuations from lattice QCD, arXiv: 1607.02527, submitted to Phys. Rev. D. **36 citations**.

25. J. Gunther et al., The QCD equation of state at finite density from analytical continuation, EPJ Web Conf. 137 (2017) 07008. **42 citations**

24. A. Dainese et al. INFN What Next: Ultra-relativistic Heavy-Ion Collisions, Frascati Phys. Ser. 62 (2016). **5 citations**

23. C. Ratti, Lattice QCD: bulk and transport properties of QCD matter, Nucl. Phys. A956 (2016) 51. **14 citations**

22. R. Bellwied et al., Towards the QCD phase diagram from analytical continuation, Nucl. Phys. A956 (2016) 797. **15 citations**

21. S. Pratt, C. Ratti, W. P. McCormack, Production of Charge in Heavy Ion Collisions, Phys. Rev. C92 (2015) 064905. **20 citations**

19. S. Pratt, C. Ratti, W. P. McCormack, Chemical properties of super-hadronic matter created in relativistic heavy ion collisions, arXiv: 1409.2164, submitted to Phys. Rev. Lett. **6 citations**

18. P. Alba et al., Polyakov loop and gluon quasiparticles: a self-consistent approach to Yang-Mills thermodynamics, Nucl. Phys. A934 (2015) 41. **14 citations**

17. W. Alberico et al., Survival of Bc mesons in a hot plasma within a potential model, Central Eur. J. Phys 12 (2014) 780. **2 citations**

16. M. Bluhm et al., Lattice QCD-based equations of state at vanishing net-baryon density, Nucl. Phys. A929 (2014) 157. **27 citations**

15. M. Ruggieri et al., Polyakov Loop and Gluon Quasiparticles in Yang-Mills Thermodynamics, Phys. Rev. D86 (2012) 054007. **40 citations**

14. S. Borsanyi et al., Transition Temperature and the equation of state from lattice QCD, Wuppertal-Budapest results, Journal of Physics G38 (2011) 124101. **16 citations**

13. S. Borsanyi et al., Correlations and Fluctuations from lattice QCD, Journal of Physics G38 (2011) 124060. **25 citations**

12. C. Ratti et al., Recent results on QCD thermodynamics: lattice QCD versus Hadron Resonance Gas Model, Nucl. Phys. A855 (2011) 253. **36 citations**

11. S. Borsanyi et al., QCD equation of state from the lattice, AIP Conf. Proceedings 1343 (2011) 519. **1 citation**

10. M. Lublinsky, C. Ratti, E. Shuryak, Radiation of an electric charge in the field of a magnetic monopole, Phys. Rev. D81, (2010) 014008. **14 citations**

9. C. Ratti, The role of color-magnetic monopoles in a gluonic plasma, Nucl. Phys. A830 (2009), 315C. **5 citations**

8. K. Dusling, C. Ratti, I. Zahed, Polyakov-Nambu-Jona-Lasinio model in 0+1 dimensions, Phys. Rev. D79, (2009) 034027. **9 citations**

7. W. Weise, C. Ratti, S. Roessner, Phases of QCD, Polyakov Loop and Quasiparticles, Prog. Theor. Phys. Suppl. 168 (2007) 435. **1 citation**

6. C. Ratti, S. Roessner, W. Weise, A field theoretical model for QCD thermodynamics, Journal of Physics G: Nucl. Part. Phys. 34 (2007) S647-S650.

5. C. Ratti, M. A. Thaler, W. Weise, Phase diagram and thermodynamics of the PNJL model, "The CBM Physics Book - Compressed Baryonic Matter in Laboratory Experiments". Springer Series: Lecture Notes in Physics, Vol.814, 1st Ed., 2011. **38 citations**

4. A. Drago, M. Gibilisco, C. Ratti, Evaporation of the gluon condensate: a model for pure gauge SU(3)c phase transition, Nucl. Phys. A742 (2004) 165. **31 citations**

3. C. Ratti, The NJL model and strange quark matter, Europhys. Lett., Vol. 61, N. 3 (2003) 314. **13 citations**

2. W. M. Alberico, F. Giacosa, M. Nardi, C. Ratti, Baryonic masses based on the NJL model, Eur. Phys. J. A16 (2003) 221. **7 citations**

1. W. M. Alberico, A. Drago, C. Ratti, Stability of strange quark matter: MIT bag versus Color Dielectric Model, Nucl. Phys. A706 (2002) 143. **19 citations**

CONTRIBUTIONS TO CONFERENCE PROCEEDINGS

55. J. Karthein, Thermal-model-based characterization of heavy-ion-collision systems at chemical freeze-out, EPJ Web Conf. 259 (2022) 11010.

54. P. Parotto et al., Finite chemical potential equation of state for QCD from an alternative expansion scheme, EPJ Web Conf. 259 (2022) 10015.

53. R. Bellwied et al., Quantifying corrections to the hadron resonance gas with lattice QCD, Lattice2021 proceedings.

52. P. Parotto et al., Equation of state of QCD at finite chemical potential from an alternative expansion scheme, Lattice2021 proceedings.

51. J. Karthein et al., Strangeness neutral equation of state with a critical point, CPOD2021 proceedings.

50. T. Dore, Off-of-equilibrium effects on Kurtosis Along Strangeness-Neutral Trajectories, EPJ Web Conf. 259 (2022) 10001.

49. E. McLaughlin et al., Shear viscosity at finite baryon density, EPJ Web Conf. 259 (2022) 13006.

48. C. Ratti, Update on BEST Collaboration and Status of Lattice QCD, Springer Proc. Phys. 250 (2020) 373.

47. C. Ratti et al., The QCD transition line from lattice simulations, J. Phys. Conf. Ser. 1602 (2020) 012011.

46. S. Borsanyi et al., Searching the QCD critical endpoint with lattice simulations, EPJ Web Conf. 235 (2020) 02004.

45. P. Alba et al., Chemical freeze-out parameters of net-kaons in heavy-ion collisions, Proceedings of Quark Matter 2019.

44. J. M. Stafford et al., Determination of Chemical Freeze-out Parameters from Net-kaon fluctuations at RHIC, Proceedings of Strangeness in Quark Matter 2019.

43. R. Bellwied et al., Cross-correlators of conserved charges in QCD, Proceedings of Strangeness in Quark Matter 2019.

42. C. Ratti, Lattice-based Equation of State of QCD matter with a critical point, PoS CORFU2018 (2019) 161.

41. R. Bellwied et al., Extracting the strangeness freeze-out temperature from net-Kaon data at RHIC, PoS CORFU2018 (2019) 175.

40. C. Ratti, QCD at non-zero density at phenomenology, PoS LATTICE2018 (2019) 004.

39. J. Guenther et al., Lattice thermodynamics at finite chemical potential from analytical continuation, J. Phys. Conf. Ser. 1070 (2018) 012002.

38. C. Ratti et al., Freeze-out properties from net-Kaon fluctuations at RHIC, J. Phys. Conf. Ser. 1070 (2018) 012003.

37. J. Noronha-Hostler et al., Strangeness at finite temperature from Lattice QCD, Journal of Physics: Conference Series 779 (2017) 012050.

36. C. Ratti, Bulk properties of QCD matter from lattice simulations, J.Phys.Conf.Ser. 779 (2017) no.1, 012016.

35. C. Ratti, Recent results on lattice QCD thermodynamics, J.Phys.Conf.Ser. 736 (2016) no.1, 012001.

34. J. Guenther et al., The curvature of the crossover line in the (T,\mu)-phase diagram of QCD, PoS LATTICE2015 (2016) 142.

33. V. Mantovani Sarti et al., Fluctuations of conserved charges within a Hadron Resonance Gas approach: chemical freeze-out conditions from net-charge and net-proton fluctuations, EPJ Web Conf. 97 (2015) 00019.

32. V. Mantovani Sarti et al., Higher order fluctuations of strangeness and flavour hierarchy, J.Phys.Conf.Ser. 599 (2015) 012022.

31. P. Alba et al., Determination of freeze-out conditions from fluctuations in the Hadron Resonance Gas model, J.Phys.Conf.Ser. 599 (2015) 012021.

30. M. Bluhm et al., Parametrization for chemical freeze-out conditions from net-charge fluctuations measured at RHIC, J.Phys.Conf.Ser. 612 (2015) 012041.

29. S. Borsanyi et al., Recent results on the equation of state of QCD, PoS Lattice2014 (2015) 224.

28. S. Borsanyi et al., Fluctuations of conserved charges on the lattice and in heavy ion collisions, J. Phys. Conf. Ser. 535 (2014) 012030.

27. C. Ratti et al., Freeze-out conditions from fluctuations of conserved charges, Nucl. Phys. A931 (2014) 802.

26. M. Bluhm et al., Determination of freeze-out conditions from fluctuation observables measured at RHIC, Nucl. Phys. A931 (2015) 814.

25. P. Alba et al., Equations of state based on recent lattice QCD results at vanishing net- baryon density, J. Phys. Conf. Ser. 527 (2014) 012014.

24. M. Bluhm et al., Flavor-specific behavior of conserved charge fluctuations at the QCD confinement transition, J. Phys. Conf. Ser. 509 (2014) 012050.

23. S. Borsanyi et al., Freeze-out parameters from continuum extrapolated lattice data, PoS LATTICE2013 (2014) 156.

22. P. Alba et al. Flavor hierarchy in the Confinement Transition of QCD, PoS CPOD2013 (2013) 060.

21. C. Ratti et al. Lattice QCD thermodynamics in the presence of the charm quark. Nucl. Phys. A904 (2013) 869c.

20. S. Krieg et al., Fluctuations of conserved charges at finite temperature from lattice QCD, J. Phys. Conf. Series 432 (2013) 012012.

19. S. Borsanyi et al., Correlations and fluctuations from lattice QCD: Wuppertal-Budapest results, Acta Physica Polonica Supplement 5 (2012) 1123.

18. S. Borsanyi et al., Correlations and fluctuations of conserved charges from lattice QCD, PoS QNP2012 (2012) 108.

17. C. Ratti et al., Recent results on correlations and fluctuations from lattice QCD, PoS BORMIO2012 (2012) 029.

16. M. Ruggieri et al., Quasiparticles and Z(N)-lines in Hot Yang-Mills theories, AIP Conf.Proc. 1492 (2012) 274-280.

15. S. Borsanyi et al., Transition Temperature and the equation of state from lattice QCD, Wuppertal-Budapest results, J. Phys. Conf. Ser. 316 (2011) 012020.

14. S. Borsanyi et al., The QCD equation of state and the effects of the charm, PoS LATTICE2011 (2011) 201.

13. S. Borsanyi et al., QCD thermodynamics on the lattice and in the Hadron Resonance Gas Model, Journal of Physics: Conference Series 336 (2011) 012019.

12. S. Borsanyi et al., QCD transition temperature: full staggered result, Proceedings of Science LATTICE 2010 (2010), 185.

11. S. Borsanyi et al., N_f=2+1 flavour equation of state, Proceedings of Science LATTICE 2010 (2010), 171.

10. C. Ratti, Role of monopoles in a gluonic plasma, Acta Physica Polonica B Proceedings Supplement vol. 3 n. 4 (2010), p.823.

9. C. Ratti, E. Shuryak, The role of color-magnetic monopoles in a gluon plasma, PoS (QCD-TNT09) 037, 2009.

8. A. Beraudo, J.-P. Blaizot, C. Ratti, Real and imaginary-time quarkonium correlators in a hot plasma, PoS CONFINEMENT8 (2008),117.

7. C. Ratti, S. Roessner, W. Weise, Phases of QCD: lattice thermodynamics, quasiparticles and Polyakov loop, “Cortona 2006, theoretical nuclear physics in Italy” World Scientific, p.359.

6. C. Ratti, M. A. Thaler, W. Weise, Phases of QCD: lattice thermodynamics versus PNJL model, In “Particles and Nuclei”, AIP Conf. Proceedings 842 (2006), 104.

5. C. Ratti, M. A. Thaler, W. Weise, Phases of QCD: lattice thermodynamics and a field theoretical model, Rom. Rep. Phys. 58 (2006) 13-17.

4. C. Ratti, W. Weise, Thermodynamics of the two-colour NJL model, Theoretical Nuclear Physics in Italy, World Scientific, Singapore, 73-80.

3. C. Ratti, Model dependence of the stability of strange quark matter, Theoretical Nuclear Physics in Italy, World Scientific, 363-370.

2. W. M. Alberico, C. Ratti, Stability of strange quark matter: model dependence, AIP Conf. Proc. 644 (2003) 348,

1. C. Ratti, Stability of strange quark matter in the MIT bag Model and in the Color Dielectric Model, Conference Proceedings “Statistical QCD”, page P33, Elsevier.

PRESENTATIONS AT INTERNATIONAL CONFERENCES

107. Status of the MUSES collaboration, talk at the XXXIX Winter Workshop on Nuclear dynamics, Jackson (WY), 12-16 February 2024.

106. *The QCD equation of state*, overview talk at the NP3M collaboration meeting, Knoxville, 31 January-2 February 2024.

105. *Status of lattice QCD at finite density*, invited talk at the joint APS/JPS DNP meeting, Hawaii, 27 November-1 December 2023.

104. *Lessons from lattice QCD*, invited talk at the Holmganga workshop, Helsingborg, 26-30 June 2023.

103. *Status of the MUSES collaboration*, MUSES collaboration meeting, University of Illinois at Urbana Champaign, 15-17 May 2023.

102. *Progress on hot and dense QCD from first principles*, invited talk at the APS April meeting, Minneapolis, 15-18 April 2023.

101. *From heavy ion to neutron star collisions*, invited **plenary** talk at the Texas APS meeting, Commerce, 23-25 March 2023.

100. *Status of the MUSES collaboration,* talk at the "XXXVIII Winter Workshop on Nuclear Dynamics", Puerto Vallarta (Mexico), 5-11 February 2023.

99. *The QCD Equation of State,* invited talk at the Latin American Symposium, Quito (Ecuador), 14-18 November 2022.

98. *NUSTEAM – Nuclear Science in Texas to Enhance and Advance Minorities*, APS DNP meeting, New Orleans, 27-30 October 2022.

97. *Theory overview of dense QCD matter,* invited talk at the Hot and Cold QCD Townhall meeting, MIT (Boston), 23-25 September 2022.

96. *Recent results on hot and dense matter from the lattice,* invited talk at the XVIII international conference "XQCD", Trondheim (Norway), 27-29 July 2022.

95. *QCD Equation of State from first principles,* Invited **plenary talk** at the 15th International Conference on the Interconnections between Particle Physics and Cosmology, St. Louis (USA), 6-10 June 2022.

94. *Simulations of matter under extreme conditions,* Invited **keynote presentation** at the Inaugural Meeting of the Illinois Center for Advanced Studies of the Universe, 19-21 May 2022.

93. *Overview of the BEST collaboration and status of lattice QCD,* Invited talk at the GGI workshop "Phase transitions in Particle Physics", 28 March-1 April 2022.

92. *Status of lattice QCD at finite density,* invited talk at the 1st Workshop on Physics at High Baryon Density, 19-20 March 2022.

91. *Equation of state from lattice QCD,* talk at the "XXXVII Winter Workshop on Nuclear Dynamics", Puerto Vallarta (Mexico), 27 February-5 March 2022.

90. *NUSTEAM – Nuclear Science in Texas to Enhance and Advance Minorities,* National Society of Black Physicists Zoom virtual conference, 4-7 November 2021.

89. *NUSTEAM – Nuclear Science in Texas to Enhance and Advance Minorities,* APS DNP Zoom virtual meeting, 10-14 October 2021.

88. Panelist at the 7th PAX (Physics and Astrophysics at the Extreme) workshop. 23-27 August 2021.

87. Panelist at the DOE HEP-PI Meeting, 11 August 2021.

86. *Status of BEST collaboration and lattice QCD* at the 9th Biennial Workshop of the APS Topical Group on Hadronic Physics (GHP2021), Zoom virtual meeting, 13-16 April 2021.

85. *Panelist* at the Workshop "From heavy-ion collisions to Neutron Stars", Zoom virtual meeting, 19-21 August 2020

84. *QCD transition line from the lattice,* Invited talk at the Workshop "Criticality in QCD and the Hadron Resonance Gas model", Zoom virtual meeting (should have been in Wroczlaw, Poland), 29-31 July 2020

83. *Equation of State and transition line of QCD,* Invited **Opening** Talk at the INT Program "Criticality and Chirality: Novel Phenomena in Heavy Ion Collisions", Zoom virtual meeting (should have been at the INT Seattle), 11-22 May 2020

82. *The hadronic resonance spectrum and QCD at finite temperature and density,* Invited **review** talk at the April meeting of the American Physical Society, Zoom virtual meeting (should have been in Washington DC), 18-21 April 2020

81. *QCD transition line from lattice simulations,* talk at the "XXXVI Winter Workshop on Nuclear Dynamics", Puerto Vallarta (Mexico), 1-6 March 2020

80. *Properties of strongly interacting matter from first principles,* Invited **plenary** talk at the Fall Meeting of the Texas Section of the American Physical Society, Lubbock (TX) 25-26 Oct. 2019

79. *Lattice-based Equation of State of QCD matter with a critical point,* Invited talk at the 7th International Symposium on Non-Equilibrium Dynamics, Castiglione della Pescaia (Italy) 17-21 June 2019

78. *Update on BEST collaboration and status of lattice QCD,* Invited **plenary** talk at the "Strangeness in Quark Matter 2019" symposium, Bari, Italy, 10-15 June 2019

77. *Lattice QCD: overview and perspective,* invited talk at the Alice U.S. collaboration meeting, Knoxville (USA), 15-18 March 2019

76. *Hadronization and freeze-out from Lattice QCD,* Invited review talk at the International Workshop "From QCD matter to hadrons", Hirschegg (Austria), 13-19 January 2019

75. *Lattice-based Equation of State of QCD matter with a critical point,* Talk at the "XXXV Winter Workshop on Nuclear Dynamics", Beaver Creek (Colorado), 7-11 January 2019

74. *Fluctuations from Lattice QCD and HRG model,* Invited talk at the ECT* Workshop "Observables of Hadronization and the QCD Phase Diagram in the Cross-over Domain, ECT* Trento (Italy), October 15-19 2018

73. *Lattice-based Equation of State of QCD matter with a critical point,* Invited talk at CPOD 2018, Corfu (Greece), 22-27 September 2018

72. *Properties of strongly interacting matter from fist principles*, Invited talk at the ECT* 25th Anniversary Symposium ECT* Trento (Italy), August 31st 2018

71. *Lattice QCD and phenomenology,* Invited **plenary** talk, Lattice 2018 International Conference, East Lansing, USA, 23-28 July 2018

70. *Comparison of experimental data to lattice*, Invited talk at the "Light up" workshop, CERN, Switzerland, 14-16 June 2018

69. *Analysis of Kaon fluctuations from the beam energy scan at RHIC*, Talk at the "Quark Matter 2018" International Conference, Venice, Italy, 14-19 May 2018

68. *Recent results on the properties of strongly interacting matter from first principles*, Talk at the "XXXIV Winter Workshop on Nuclear Dynamics", Guadeloupe, 25-31 March 2018

67. *Fluctuations from lattice QCD*, Invited talk at the "EMMI workshop on Critical Fluctuations", Wuhan, China, 10-14 October 2017

66. *Lattice results on freeze-out*, Invited **plenary** talk at the "Strangeness in Quark Matter 2017" symposium, Utrecht, The Netherlands, 9-15 July 2017

65. *Equation of state and fluctuations from the lattice*, Talk at the "XXXIII Winter Workshop on Nuclear Dynamics", Snowbird, 8-14 January 2017

64. *Recent results on lattice QCD thermodynamics*, Invited talk at the Mini-Lattice QCD symposium, Torino, Italy, 22 December 2016

63. *Strange States from lattice QCD thermodynamics*, Invited talk at the "YSTAR2016" workshop, Jefferson Lab, 16 – 17 November 2016

62. *Equation of state and fluctuations from the lattice*, Invited talk at the "5th International Workshop on Nonequilibrium dynamics", Pukhet, Thailand, 31 October – 5 November 2016

61. *Equation of state and fluctuations from the lattice*, Invited talk at the International Workshop "Exploring the QCD Phase Diagram through Energy Scans", INT Seattle, USA, 19 September – 14 October 2016

60. *Properties of QCD matter from the lattice*, Invited review talk at the international conference "Extreme QCD 2016", Plymouth, UK, 1-3 August 2016

59. *Properties of QCD matter from the lattice*, Invited **plenary** talk at the international conference "Strong and Electroweak Matter 2016", Stavanger, Norway, 11-15 July 2016

58. *Bulk properties of QCD matter from the lattice*, Invited **plenary** talk at the international conference "Strangeness in Quark Matter 2016", LBNL, USA, 27 June-1 July 2016

57. *Recent results on lattice QCD thermodynamics*, Invited talk at the "2016 IUB Symposium on Strongly Interacting Matter", Indiana University, 11 May 2016

56. *Lattice QCD: bulk properties of QCD matter*, Invited opening talk at the XXXII Winter Workshop on Nuclear Dynamics, Guadeloupe, 29 February- 5 March 2016

55. *Lattice QCD: bulk and transport properties of QCD matter*, Invited **plenary** talk at the international conference "Quark Matter 2015", Kobe, Japan, 28 September- 3 October 2015

54. *The role of monopoles in a gluon plasma*, Invited talk at the international Workshop "Gauge Field Topology: From Lattice Simulations and Solvable Models to Experiment", Stony Brook, USA, 17-21 August 2015

53. *QCD thermodynamics from lattice simulations*, Talk at the international Conference on Heavy Ion Collisions in the LHC era and beyond, Quy Nhon, Vietnam, 26 July-1 August 2015

52. *Fluctuations of conserved charges and freeze-out conditions in heavy-ion collisions*, Talk at the international Conference on Nucleus-Nucleus collisions, Catania, Italy, 21-26 June 2015

51. *Fluctuations of conserved charges and freeze-out conditions in heavy-ion collisions*, Invited talk at the international workshop "CIPANP 2015", Vail, USA, 19-24 May 2015

50. *Fluctuations of conserved charges and freeze-out conditions in heavy-ion collisions*, Talk at the XXXI Winter Workshop on Nuclear Dynamics, Keystone, USA, 25-31 January 2015

49. *Fluctuations of conserved charges and freeze-out conditions in heavy-ion collisions*, Talk at the international workshop "QCD Hadronization and the Statistical Model", ECT* Trento, Italy, 6-10 October 2014

48. *Fluctuations of conserved charges and QCD equation of state from the lattice*, Talk at the XXXVII Brazil physical society meeting, Maresias, Brazil, 8-12 September 2014

47. *Fluctuations of conserved charges and freeze-out conditions in heavy-ion collisions*, Talk at the international conference "Extreme QCD", Stony Brook, USA, 19-21 June 2014

46. *Fluctuations of conserved charges and freeze-out conditions in heavy-ion collisions*, Talk at the international conference on Nuclear Dynamics, Crete, Greece, 9-13 June 2014

45. *Fluctuations of conserved charges: lattice meets experiment*, Talk at the international conference "Quark matter 2014", Darmstadt, Germany, 19-23 May 2014

44. *Fluctuations of conserved charges: lattice meets experiment*, Talk at the international "Winter workshop for Nuclear Dynamics", Galveston, USA, 6-12 April 2014

43. *Freeze-out parameters: lattice meets experiment*, Invited Talk at the International Workshop "Lattice QCD and hadron Physics", ECT*, Trento, Italy, 14-16 January 2014

42. *Is there a flavor hierarchy in the deconfinement transition of QCD?*, Talk at the International Conference "High Energy Physics in the LHC Era", Valparaiso, Chile, 16-20 December 2013

41. *Freeze-out parameters: lattice meets experiment*, Invited Talk at the International Conference "QCD TNT III", ECT*, Trento, Italy, 2-6 September 2013

40. *Flavor Hierarchy in the Deconfinement Transition of QCD*, Invited Talk at the International Conference "Quarks, Gluons, and Hadronic matter under Extreme Conditions", St. Goar, Germany, 18-21 March 2013

39. *Fluctuations from Lattice QCD and in the Hadron Resonance Gas Model*, Invited Talk at the Intl. Conference "Emmy Rapid Reaction Task Force", Darmstadt, Germany, 11-22 February 2013

38. *Lattice QCD Thermodynamics in the presence of the charm quark*, Talk Presented at the International Conference "Quark Matter 2012", Washington (USA), 12-18 August 2012

37. *Correlations and Fluctuations from Lattice QCD*, Invited Talk at the International Conference "Excited QCD 2012", Peniche, Portugal, 6-12 May 2012

36. *Correlations and Fluctuations from Lattice QCD*, Talk Presented at the International Conference "QNP 2012", Paris, France, 16-20 April 2012

35. *Recent results on correlations and fluctuations from Lattice QCD* , Seminar at the "50th International Winter Meeting on Nuclear Physics", Bormio, Italy, 23-27 January 2012

34. *Recent lattice QCD results on quark number susceptibilities by the Wuppertal-Budapest Lattice QCD collaboration*, Invited talk at the international conference "Fluctuations, Correlations and RHIC Low Energy Runs", Brookhaven National Laboratory, USA, 3-5 October 2011

33. *Correlations and fluctuations from Lattice QCD,* Invited talk at the international conference "Quarkonia in deconfined matter", Acitrezza, Italy, 28-30 September 2011

32. *Recent lattice QCD results on quark number susceptibilities by the Wuppertal-Budapest collaboration*, Talk at the international conference "Toric Workshop 2011", Crete, Greece, 5-8 September 2011

31. *Correlations and fluctuations from Lattice QCD,* Talk at the international conference "Quark Matter 2011", Annecy, France, 23-28 May 2011

30. *Correlations and fluctuations from Lattice QCD,* Invited lecture at the international conference "Three days on quarkyonic island", Wroclaw, Poland, 19-21 May 2011

29. *Recent results on QCD thermodynamics: Lattice QCD versus Hadron Resonance Gas model*, Talk presented at the XIII Meeting on Theoretical Nuclear Physics, Cortona, Italy, 6-8 April 2011.

28. *The Lattice QCD equation of state*, Invited Review talk at the international conference "Excited Hadronic States and the Deconfinement Transition", Jefferson Lab, USA, 23-25 February 2011

27. *Recent results on QCD thermodynamics: Lattice QCD versus Hadron Resonance Gas model*, Talk at the international conference "Hard Probes 2010", Eilat, Israel, 10-15 October 2010

26. *Recent results on QCD thermodynamics: Lattice QCD versus HRG model*, Talk at the International Workshop "*Modeling of the parton-hadron phase transition*" Villasimius, Italy, 23-24 September 2010

25. *Recent results on QCD thermodynamics: Lattice QCD versus Hadron Resonance Gas model*, Talk at the international conference "The first heavy ion collisions at the LHC", CERN, 16 August – 10 September 2010

24. *Recent results on QCD thermodynamics: Lattice QCD versus Hadron Resonance Gas model*, Talk at the International Conference "Quantifying the properties of hot QCD matter", INT, Seattle, USA, 24 May – 16 July 2010

23. *The role of color-magnetic monopoles in a gluonic plasma*, Invited talk at the International Conference "Excited QCD", Tatra National Park, Slovakia, 31 January - 6 February 2010

22. *The role of color-magnetic monopoles in a gluonic plasma*, Invited talk at the International Workshop "QCD Green's Functions, Confinement and Phenomenology", ECT*, Villazzano (Trento), Italy, 7-11 September 2009

21. *The role of monopoles in a gluon plasma*, Talk at the International Conference "Quark Matter 2009", Knoxville, Tennessee, March 30- April 4 2009

20. *Phases of QCD, Polyakov loop and quasiparticles*, Invited seminar at the workshop "The QCD critical point", INT Seattle, July 28-August 22 2008

19. *A field theoretical model for QCD thermodynamics*, Invited seminar at the Collaboration meeting "Electroweak interactions with nuclei and physics of the quark-gluon plasma: many-body techniques at high energies and temperatures", ECT*, Villazzano (Trento), Italy, 26-30 November 2007

18. *A field theoretical model for QCD thermodynamics*, Talk at the International School "Quark gluon plasma and relativistic heavy ions: past, present and future", Torino, Italy, 1-8 February 2007

17. *A field theoretical model for QCD thermodynamics,* Talk at the International Conference "Quark Matter 2006" Shanghai, China, 14-20 November 2006

16. *Phases of QCD: lattice thermodynamics, quasiparticles and Polyakov loop* Talk at the XI Meeting on Problems in Theoretical Nuclear Physics Cortona, Italy, 11-14 October 2006

15. *Model Field Theories for QCD thermodynamics*, Invited talk at the International Conference "Heavy Ion Reactions at Ultrarelativistic Energies", ECT*, Trento, Italy, 26-30 June 2006

14. *Phases of QCD*, Invited talk at the Intl. Conference "The Physics of High Baryon Density", ECT*, Trento, Italy, 29 May- 2 June 2006

13. *Phases of QCD*, Talk at the International Conference "Hot Quarks 2006", Villasimius, Italy, 15-20 May 2006

12. *Phases of QCD*, Talk at the International Conference "QCD at finite density", ECT*, Trento, Italy, 21-25 March 2006

11. *Phases of QCD*, Group Report at the Spring meeting of the German Physical Society (DPG), Munich, Germany, 20-24 March 2006

10. *Phases of QCD*, Talk at the meeting "Physics of Heavy-Ion Collisions and QGP", Florence, Italy, 16-17 February 2006

9. *Phases of QCD*, Invited seminar at the Collaboration meeting "Many body techniques at high energies: electro-weak scattering on nuclei versus the physics of the QGP", ECT*, Villazzano (Trento), Italy, 7-11 November 2005

8. *Phases of QCD: lattice thermodynamics and a field theoretical model*, Talk at the International Conference "PANIC 2005", Santa Fe, New Mexico, 24-28 October 2005

7. *Phases of QCD: a field theoretical model*, Invited seminar at the II Workshop of the Virtual Institute for "Dense Hadronic Matter and QCD phase transition", Prerow, Germany, 6-8 October 2005

6. *Thermodynamics of three colour QCD*, Talk at the International School "Quark gluon plasma and relativistic heavy ions: past, present and future", Torino, Italy, 11-17 May 2005

5. *Thermodynamics of the two colour NJL model*, Talk at the X Meeting on Problems in Theoretical Nuclear Physics, Cortona, Italy, 6-9 October 2004

4. *Thermodynamics of two colour QCD and the Nambu Jona-Lasinio model*, Talk at the Spring meeting of the German Physical Society (DPG), Cologne, Germany, 8-12 March 2004

3. *A model for pure gauge SU(3)c phase transition*, Talk at the Intl, School "QGP and relativistic heavy ions: past, present, future", Torino, Italy, 1-5 December 2003

2. *Model dependence of the stability of strange quark matter*, Talk at the IX Meeting on Problems in Theoretical Nuclear Physics, Cortona, Italy, 9-12 October 2002

1. *Stability of strangelets in the MIT bag and in the Color Dielectric Model*, Talk at the Giselda Meeting, Florence, Italy, 25-27 October 2001

INVITED SEMINARS AT UNIVERSITIES AND INSTITUTES

61. *The QCD equation of state*, invited talk at the MIT, 3 April 2023.

60. *The QCD Equation of State,* invited **Colloquium** at Penn State University, October 25th 2022.

59. *From heavy-ion to neutron star collisions,* invited **Colloquium** at the University of Trento (Italy), September 7th 2022.

58. *The MUSES and NP3M collaborations,* Invited **Colloquium** at INT Seattle, March 10th 2022.

57. *The MUSES and NP3M collaborations,* Invited talk at NIKHEF virtual colloquium series, December 3rd 2021

56. *Equation of state from lattice QCD*, Invited talk at the RIKEN-BNL weekly seminary series, July 29th 2021

55. *Construction of EoS with a critical point,* Invited talk at the RHIC-BES online seminar series (virtually on Zoom), June 15th 2021

54. *QCD at non-zero density and phenomenology,* **Colloquium** at North Carolina State University (virtually on Zoom), February 22nd 2021

53. *QCD at non-zero density and phenomenology,* **Colloquium** at the University of Arizona (virtually on Zoom), November 18th 2020

52. *Equation of State and Transition line of QCD,* **Colloquium** at the University of Minnesota (virtually on Zoom), November 3rd 2020

51. *Properties of strongly interacting matter from first principles,* **Colloquium** at the University of Campinas (Brasil) (virtually on Zoom), April 22nd 2020

50. *Properties of strongly interacting matter from first principles,* **Colloquium** at Texas A&M University (USA), January 23rd 2020

49. *Properties of strongly interacting matter from first principles,* **Colloquium** at the University of Torino (Italy), December 20th 2019

48. *Properties of strongly interacting matter from first principles,* **Colloquium** at the Washington University in St. Louis (USA), October 2nd 2019

47. *QCD at finite density and phenomenology,* **Colloquium** at the GSI Darmstadt (Germany), December 19 2018

46. *Properties of Strongly Interacting Matter from first principles,* **Colloquium** at Sam Houston University, October 26 2018

45. *Properties of Strongly Interacting Matter from first principles*, Invited Seminar at the Wright Laboratory, Yale University, May 1 2018

44. *Properties of Strongly Interacting Matter from first principles*, Invited Seminar at the Nuclear Theory Group, Duke University, Durham, February 6 2018

43. *Properties of Strongly Interacting Matter from first principles*, **Colloquium**, University of Bielefeld, Germany, December 11 2017

42. *Phases of strongly interacting matter: from QCD to effective theories*, Invited seminar at the Nuclear Theory Group, University of Barcelona, Spain, June 2 2017

41. *Bulk properties of strongly interacting matter from lattice QCD*, **Heavy ion tea**, LBNL, USA, 15 March 2016

40. *Quark-Gluon Plasma Physics at the LHC*, **Colloquium**, University of Houston, USA, 17 April 2014

39. *Recreating the Big Bang in the laboratory*, **Master-class** on "Elementary particle physics" for High School Students, Torino University, 28 March 2014

38. *Quark-Gluon Plasma Physics at the LHC*, **Public lecture**, Torino University, 6 February 2014

37. *Flavor Hierarchy in the Deconfinement Transition of QCD*, Rice University, Texas (USA), 12 March 2013

36. *The ying and the yang of particle production in the universe*, **Colloquium**, Houston University, Texas (USA), 5 March 2013

35. *Flavor Hierarchy in the Deconfinement Transition of QCD*, Wigner Institute, Budapest (Hungary), 18 December 2012

34. *The ying and the yang of particle production in the universe*, **Colloquium**, Technical University of Munich, Germany, 30 April 2012

33. *Recreating the big-bang in the laboratory,* **Public Lecture** organized by the Associazione Amici del Festival della Scienza e dell'Associazione Amici del Museo di Storia Naturale `G. Doria' Genova (Italy) 20 Dicember 2011

32. *Recent results on QCD thermodynamics from the WB collaboration*, Universita` degli Studi di Ferrara, 16 November 2011

31. *Recent results on flavor diagonal and non-diagonal quark number susceptibilities*, Bergische Universität Wuppertal,Germany, 14 April 2011

30. *QCD Matter under extreme conditions*, **Colloquium**, Torino University, Italy, 18 February 2011.

29. *Recent results on diagonal and non-diagonal quark number susceptibilities*, University of Regensburg, Germany, 22 October 2010

28. *Hadron Resonance Gas Model and Lattice QCD*, Bergische Universität Wuppertal, Germany, 15 January 2010

27. *Magnetic Scenario for the Quark Gluon Plasma*, **Colloquium**, Frankfurt University, Germany, 10 December 2009

26. *Magnetic Scenario for the Quark Gluon Plasma*, Bergische Universität Wuppertal, Germany, 26 November 2009

25. *Phases of QCD, field theoretical models and Quark Gluon Plasma phenomenology*, ECT*, Villazzano (Trento), Italy, 26 May 2009

24. *Role of Monopoles in a Gluon Plasma*, Rutgers University, Piscataway, USA, 20 April 2009.

23. *Role of Monopoles in a Gluon Plasma*, Physics Department, Genova University, Italy, 17 April 2009

22. *Role of Monopoles in a Gluon Plasma*, Brookhaven National Laboratory, USA, 12 December 2008

21. *QCD thermodynamics, quasiparticles and Polyakov loop*, Center for Theoretical Physics, MIT, Boston, USA, 27 October 2008

20. *A field theoretical model for QCD thermodynamics*, University of Connecticut, Storrs, USA, 21 April 2008

19. *Quarkonia propagation in a thermal medium*, Brookhaven National Laboratory, USA, 14 March 2008.

18. *A field theoretical model for QCD thermodynamics*, Kent State University, Ohio, USA, 11 December 2007

17. *Phases of QCD: lattice thermodynamics, quasiparticles and Polyakov loop*, State University of New York, Stony Brook, USA, 25 January 2007

16. *Phases of QCD: lattice thermodynamics, quasiparticles and Polyakov loop*, Brookhaven National Laboratory, USA, 19 January 2007

15. *A field theoretical model for QCD thermodynamics*, Department of Physics, Ferrara University, Italy, 27 November 2006

14. *Phases of QCD in the PNJL model*, Technical University of Munich, Germany, 24 April 2006

13. *Phases of QCD: lattice thermodynamics and a field theoretical model*, Lawrence-Berkeley National Laboratory, California, 31 October 2005

12. *Phases of QCD*, Technical University of Munich, Germany, 17 October 2005

11. *Phases of QCD: lattice thermodynamics and a field theoretical model*, ECT* board meeting, Villazzano (Trento), Italy, 17 September 2005

10. *Phases of QCD: lattice thermodynamics and a field theoretical model*, ECT*, Villazzano (Trento), Italy, 21 July 2005

9. *Phases of QCD: lattice thermodynamics and a field theoretical model*, Laboratori Nazionali di Frascati, Italy, 9 June 2005

8. *Thermodynamics of three color QCD*, Technical University of Munich, Germany, 28 April 2005

7. *Thermodynamics of two and three color QCD*, Technical University of Munich, Germany, 19 October 2004

6. *Thermodynamics of two color QCD and the NJL model*, Department of Theoretical Physics, Torino University, Italy, 4 October 2004

5. *Thermodynamics of two color QCD and the NJL model*, Technical University of Munich, Germany, 9 February 2004

4. *Thermodynamics of two color QCD and the NJL model*, ECT*, Villazzano (Trento), Italy, 29 January 2004

3. *A model for pure gauge SU(3)c phase transition*, ECT*, Villazzano (Trento), Italy, 30 October 2003

2. *Stability of strange quark matter: model dependence*, Department of Physics, Ferrara University, Italy, 17 December 2002

1. *Stability of strange quark matter: model dependence*, ECT*, Villazzano (Trento), Italy, 5 December 2002

LANGUAGES

Italian: Mother tongue

English: Fluent (spoken and written)

German: Fluent