

Ismail Soudi

Curriculum Vitae

isma@physik.uni-bielefeld.de | Male, Born 1995 | Nationality: Morocco

"After all, I was born not knowing and have only had a little time to change that here and there." — Richard P. Feynman

Professional Experience

Oct 2025 – Present	Akademischer Rat — University of Bielefeld, Bielefeld, Germany
Nov 2023 – Sept 2025	Postdoctoral Researcher — University of Jyväskylä, Jyväskylä, Finland With: Kari J. Eskola and Harri Niemi
Nov 2021 – Oct 2023	Postdoctoral Researcher — Wayne State University, Detroit, USA With: Abhijit Majumder

Education

2018 – 2021	PhD in Physics — Bielefeld University, Bielefeld, Germany Thesis: "Jet fragmentation in QCD medium" with Soeren Schlichting
2016 – 2018	MSc in Theoretical Physics — University of Wroclaw, Wroclaw, Poland Thesis: "Meson dissociation in hot, dense matter within the Beth-Uhlenbeck approach" with David Blaschke
2015 – 2016	1st Year MSc in Fundamental Physics — Université Pierre et Marie Curie, Paris, France
2012 – 2015	Bachelor's in Fundamental Physics — Université Pierre et Marie Curie, Paris, France

Scholarships and Graduate School

2018 – 2021	HGS-HIRe for FAIR Fellowship Travel fund (1K EUR per year)
2019 – 2021	Bielefeld Graduate School in Theoretical Sciences (BGTS)

Research Experience

Oct 2025 – Present	Member — CRC-TR 211 'Strong-interaction matter under extreme conditions' – TRR 211
Nov 2023 – Sept 2025	Member — Centre of Excellence in Quark Matter Research Council of Finland's Centre of Excellence
Nov 2023 – Sept 2025	Member — YoctoLHC Collaboration ERC Advanced Grant

Nov 2021 – Present	Member — JETSCAPE Collaboration NSF-funded research collaboration
Nov 2018 – Nov 2021	Junior Member — CRC-TR 211 'Strong-interaction matter under extreme conditions' – TRR 211
Jul – Sep 2018	Erasmus Internship — Institute of Space Sciences & Astronomy, Malta Gravitational waves in modified symmetric Teleparallel Gravity. With Dr. Jackson Levi Said
Oct 2017 – Jun 2018	Paid Internship — Institute of Theoretical Physics, Wroclaw, Poland Meson dissociation in hot, dense matter. With Prof. David Blaschke
May – Jun 2016	Internship — Orsay Laboratory of Theoretical Physics, Orsay, France Particle physics: QCD and QED Feynman diagram calculations. With Dr. Samuel Wallon
Jan 2015	Internship — Institut d'Astrophysique de Paris, Paris, France Astronomical spectroscopy: interstellar clouds studied by visible/UV spectroscopy. With Dr. Patrick Boissé

Teaching Experience

Winter 2024/25	Exercises in Advanced Quantum Field Theory — University of Jyväskylä
Winter 2020/21	Exercises in Non-equilibrium Physics — Bielefeld University

Languages

Arabic (Native), **French** (Native), **English** (Fluent)

Computer Skills

Programming for Physics: C++, Mathematica (xAct), Python, Julia, SageMath (SageManifolds), Fortran
Web & Other: HTML, CSS, JavaScript, LaTeX, Typst

Invited Talks (13)

1. *Small systems: theory overview - energy loss*
Large Hadron Collider Physics 2025
 National Taiwan University, Taipei, Taiwan (2025-05-09)  | 
2. *Theory overview of medium response and hard-soft correlation*
Quark Matter 2025
 Frankfurt, Germany (2025-04-10)  | 
3. *Jets in small systems*
High energy probes of the initial stages
 CERN, Geneva, Switzerland (2025-04-03)  | 
4. *Finite size effects on jet thermalization*
Light ion collisions at LHC
 CERN, Geneva, Switzerland (2024-11-14)  | 
5. *Thermalization of jets in QCD plasma*
Jet Modification and Hard-Soft Correlations
 Tokyo, Japan (2024-09-29)  | 
6. *Jets: Hard-soft correlation - Theory overview*
Hard Probes 2024
 Nagasaki, Japan (2024-09-26)  | 
7. *Studying small systems using a multi-stage approach*
New jet quenching tools to explore equilibrium and non-equilibrium dynamics in heavy-ion collisions
 ECT*, Trento, Italy (2024-02-14)  | 
8. *High- p_T azimuthal anisotropies in p - p and p - A from transverse momentum dependent distributions*
University of Michigan
 Ann Arbor, MI (2023-10-11)
9. *Thermalization of highly energetic partons in a QCD plasma*
QCD Theory Group at UCLA
 Los Angeles, USA (2023-02-09) 
10. *Thermalization of highly energetic partons in a QCD plasma*
McGill University
 Montreal, Canada (2023-02-01) 
11. *Thermalization of highly energetic partons in a QCD plasma*
RBRC Workshop: Predictions for sPHENIX (Cyber)
 BNL, Upton NY, USA (2022-07-21) 
12. *Energy loss and equilibration of a highly energetic parton in QCD plasmas*
University of Bergen
 Bergen, Norway (2022-01-18)
13. *Non-perturbative contribution to the collisional broadening and medium induced radiation in QCD plasmas*
CERN TH Heavy Ion group
 Geneva, Switzerland (2021-05-31)  | 

Presentations (20)

1. *Studying high p_T momentum azimuthal anisotropies in unpolarized proton-proton collisions using transverse momentum dependent (TMD) parton distribution and fragmentation functions*
SPIN 2023
 Durham, NC (2023-09-26)  | 
2. *Azimuthal anisotropies at high p_T from transverse momentum dependent (TMD) parton distribution and fragmentation functions*
Quark Matter 2023
 Houston, TX (2023-09-05)  | 
3. *High transverse momentum azimuthal anisotropy from initial-state correlations in p - p and p - A collisions*
INT Program: Probing QCD at High Energy and Density with Jets
 Seattle, Washington (2023-10-18)  | 
4. *Studying small systems using a multi-stage approach*
APS April Meeting - GHP 2023
 Minneapolis, MN (2023-04-01)  | 
5. *Monte Carlo methods in jet physics (lecture)*
JETSCAPE Summer School 2023
 Online (2023-07-01) 
6. *Studying small systems using a multi-stage approach*
14th Conference on the Intersections of Particle and Nuclear Physics
 Orlando, FL (2022-09-03)  | 
7. *Jet-medium excitations (lecture)*
JETSCAPE Online Summer School 2022
 Online (2022-08-01)  | 
8. *Non-perturbative determination of the collisional broadening kernel and medium-induced radiation in QCD plasmas*
Quark Matter 2022 (Cyber)
 Kraków, Poland (2022-04-07)  | 
9. *Non-perturbative contribution to the collisional broadening and determination of the in-medium splitting*
The virtual DPG-Tagung (DPG Meeting) of the Matter and Cosmos Section (SMuK)
 Online (2021-09-02)  | 
10. *Non-perturbative contribution to the collisional broadening and determination of the in-medium splitting*
INT Program 21-2b: Probing QCD at High Energy and Density with Jets (Cyber)
 Seattle, Washington (2021-08-11)  | 
11. *Non-perturbative phenomena in jet modification*
A Virtual Tribute to Quark Confinement and the Hadron Spectrum 2021
 Online (2021-08-05)  | 
12. *Non-perturbative contribution to the collisional broadening and medium induced radiation in QCD plasmas*
CRC-TR 211 Meeting and Colloquium (Cyber)
 Frankfurt, Germany (2021-06-30)
13. *Fragmentation and equilibration of jets in a QCD plasma*
Zimany School 2020 (Cyber)
 Budapest, Hungary (2020-12-10)
14. *Teleparallel gravity: the forgotten theory of gravity*
University of Bielefeld - BGTS Day
 Bielefeld, Germany (2020-10-02)

15. *Fragmentation and equilibration of jets in a QCD plasma*
Hard Probes 2020 (Cyber)
 Austin, Texas (2020-06-02)
16. *Kinetic and chemical equilibration of jets*
CRC-TR 211 Meeting and Colloquium (Cyber)
 Darmstadt, Germany (2020-04-24)
17. *Jet-medium interactions*
CRC-TR 211 lecture week
 Limburg, Germany (2019-12-13)
18. *Early time dynamics of heavy-ion collisions*
University of Bielefeld - BGTS Day
 Bielefeld, Germany (2019-10-25)
19. *Generalized Beth-Uhlenbeck approach to mesons and diquarks in hot, dense quark matter*
Institute of theoretical physics
 Wroclaw, Poland (2018-03-19)
20. *PNJL Model*
Institute of theoretical physics
 Wroclaw, Poland (2017-02-26)

Posters (2)

1. *Medium induced shower in an expanding QCD plasma*
Hard Probes 2024
 Nagasaki, Japan (2024-09-24)
2. *Fragmentation and equilibration of jets in a QCD plasma*
PC2 User Meeting 2020
 Paderborn, Germany (2020-11-26)

Publications

Publications (23)

1. Soudi, I. et al., *Soft-hard framework with exact four-momentum conservation for small systems*, Phys. Rev. C **112**, 014905 (2025)
2. Soudi, Ismail, Majumder, Abhijit, *T-odd parton distribution functions and azimuthal anisotropy at high transverse momentum in p-p and p-A collisions*, Phys. Rev. C **111**, 024901 (2025)
3. Soudi, Ismail, Takacs, Adam, *Deriving a parton shower for jet thermalization in QCD plasmas* (2025), arXiv:2510.25837
4. Roch, H. et al., *Transport-based initial conditions for heavy-ion collisions at finite densities* (2025), arXiv:2510.06996
5. Sirimanna, Chathuranga et al., *Interplay of prompt and non-prompt photons in photon-triggered jet observables*, EPJ Web Conf. **339**, 05002 (2025)
6. Roch, Hendrik et al., *Effects of hadronic reinteraction on jet fragmentation from small to large systems*, EPJ Web Conf. **339**, 02017 (2025)
7. Soudi, Ismail, *Jets: Hard-soft correlation - Theory overview*, EPJ Web Conf. **339**, 01002 (2025)
8. Soudi, Ismail, *Medium-induced parton splitting in expanding QCD matter* (2024), arXiv:2409.04806
9. Soudi, Ismail, Majumder, Abhijit, *Studying high p_T momentum azimuthal anisotropies in unpolarized proton-proton collisions using transverse momentum dependent (TMD) parton distribution and fragmentation functions*, PoS **SPIN2023**, 164 (2024)
10. Cao et al., *Jet quenching: From theory to simulation*, Int. J. Mod. Phys. E **33**, 2430002 (2024)
11. Soudi, Ismail, Majumder, Abhijit, *Azimuthal anisotropies at high- p_T from transverse momentum dependent (TMD) parton distribution and fragmentation functions*, EPJ Web Conf. **296**, 13015 (2024)
12. Soudi, Ismail, Majumder, Abhijit, *Azimuthal anisotropy at high transverse momentum in p-p and p-A collisions*, Phys. Lett. B **859**, 139105 (2024)
13. Weber et al., *Computing jet transport coefficients on the lattice*, PoS **HardProbes2023**, 180 (2023)
14. Arslanok, M. et al., *Hot QCD White Paper* (2023), arXiv:2303.17254
15. Sirimanna et al., *Quenching jets increases their flavor*, Phys. Rev. C **108**, 014911 (2023)
16. Mehtar-Tani et al., *Jet thermalization in QCD kinetic theory*, JHEP **05**, 091 (2023)
17. Schlichting, S., *Non-perturbative Determination of the Collisional Broadening Kernel and Medium-induced Radiation in QCD Plasmas*, Acta Phys. Polon. Supp. **16**, 1–A121 (2023)
18. Moore et al., *Non-perturbative phenomena in jet modification*, EPJ Web Conf. **258**, 05001 (2022)
19. Soudi, Ismail, *Energy loss and equilibration of a highly energetic parton in QCD plasmas* (2021)
20. Moore et al., *Non-perturbative determination of collisional broadening and medium induced radiation in QCD plasmas*, JHEP **10**, 059 (2021)
21. Schlichting, Soeren, Soudi, Ismail, *Energy loss and equilibration of jets in a QCD plasma.*, PoS **HardProbes2020**, 137 (2021)
22. Schlichting, Soeren, Soudi, Ismail, *Medium-induced fragmentation and equilibration of highly energetic partons*, JHEP **07**, 077 (2021)
23. Soudi et al., *Polarization of gravitational waves in symmetric teleparallel theories of gravity and their modifications*, Phys. Rev. D **100**, 044008 (2019)

JETSCAPE Collaboration (co-author, 14)

1. Ehlers, R. et al., *Bayesian inference analysis of jet quenching using inclusive jet and hadron suppression measurements*, Phys. Rev. C **111**, 054913 (2025)
2. Tachibana, Y. et al., *Enhanced signal of momentum broadening in hard splittings for γ -tagged jets in a multistage approach* (2025), [arXiv:2503.23693](#)
3. Sengupta, A. et al., *Hybrid Hadronization – A Study of In-Medium Hadronization of Jets* (2025), [arXiv:2501.16482](#)
4. Sirimanna, C. et al., *Hard-photon-triggered jets in p - p and A - A collisions*, Phys. Rev. C **111**, 064911 (2025)
5. Sirimanna, Chathuranga et al., *Photon-triggered jets as probes of multi-stage jet modification*, EPJ Web Conf. **296**, 11008 (2024)
6. Ehlers, Raymond et al., *Measuring jet quenching with a Bayesian inference analysis of hadron and jet data by JETSCAPE*, EPJ Web Conf. **296**, 15009 (2024)
7. Mankolli, Andi et al., *3D multi-system Bayesian calibration with energy conservation to study rapidity-dependent dynamics of nuclear collisions*, EPJ Web Conf. **296**, 05010 (2024)
8. Angerami, Aaron et al., *Hybrid Hadronization of Jet Showers from e^+e^- to $A + A$ with JETSCAPE*, PoS **HardProbes2023**, 166 (2024)
9. Jetscape et al., *A multistage framework for studying the evolution of jets and high- p_T probes in small collision systems*, PoS **HardProbes2023**, 128 (2024)
10. Jetscape et al., *Multiscale evolution of heavy flavor in the QGP*, PoS **HardProbes2023**, 100 (2024)
11. Fan, W. et al., *New metric improving Bayesian calibration of a multistage approach studying hadron and inclusive jet suppression*, Phys. Rev. C **109**, 064903 (2024)
12. Jetscape et al., *Effects of multi-scale jet-medium interactions on jet substructures*, PoS **HardProbes2023**, 165 (2024)
13. Tachibana, Y. et al., *Hard jet substructure in a multistage approach*, Phys. Rev. C **110**, 044907 (2024)
14. Fan, W. et al., *Multiscale evolution of charmed particles in a nuclear medium*, Phys. Rev. C **107**, 054901 (2023)

Full list: inspirehep.net/authors/1813544