Curriculum Vitae

1 Full name and date

Name, surnames: **Rischke, Dirk–Hermann**
Gender: male
Date: **11.09.2021**

2 Date and place of birth, nationality, current residence

Current work address: Institut für Theoretische Physik, Johann Wolfgang Goethe-Universität,
Max-von-Laue-Str. 1, D-60438 Frankfurt am Main, Germany,
phone: +49 (69) 798-47862, fax: +49 (69) 798-47878,
Email: drischke@itp.uni-frankfurt.de

3 Education and degrees awarded

PhD: Goethe University Frankfurt am Main, Physics, 04.02.1993
Diploma: Goethe University Frankfurt am Main, Physics, 05.07.1988
Habilitation: Theoretical Physics, Goethe University Frankfurt am Main, 18.06.1997

4 Other education and training, qualifications and skills – N/A

5 Linguistic skills

Mother tongue: German
Other tongues: English (fluent), French (basic)

6 Current Position

Full Professor for Theoretical Physics, Goethe University Frankfurt am Main, since 08.01.2001

7 Previous work experience

Employment relations:

Associate Scientist and RHIC Physics fellow	Nuclear Theory Group and RIKEN–BNL Research Center, Brookhaven National Laboratory, Upton, New York, U.S.A.	10/2000 – 01/2001
RIKEN–BNL Fellow	RIKEN–BNL Research Center, Brookhaven National Laboratory, Upton, New York, U.S.A.	09/1997 – 09/2000
Research Associate and Visiting Assistant Professor	Department of Physics, Duke University, Durham, North Carolina, U.S.A.	09/1996 – 08/1997
Visiting Postdoctoral Research Scientist	Physics Department, Columbia University, New York, U.S.A.	01/1994 – 08/1996
Scientific Assistant	Institute for Theoretical Physics, Goethe University Frankfurt am Main, Germany	01/1993 – 12/1993
Scientific Assistant	Physikalisches Institut, Goethe University Frankfurt am Main, Germany	02/1992 – 12/1992
Scientific Assistant	Institute for Theoretical Physics, Goethe University Frankfurt am Main, Germany	08/1988 – 12/1991

Secondary occupations, additional work experience:

Senior Fellow	Frankfurt Institute for Advanced Studies	11/2008 – 10/2013
Guest Professor	University of Science and Technology of China, Hefei	02/2007 –
Guest Professor	Central China Normal University, Wuhan	04/2008 –
Adjunct Fellow	Frankfurt Institute for Advanced Studies	08/2004 – 10/2008
Privatdozent	Goethe University Frankfurt am Main	18.06.1997 –
Visiting Assistant Professor	Yale University, New Haven, Connecticut, U.S.A.	01/1998 – 12/1998

8 Research funding, leadership, supervision

Research Grants:

No.	Title	EUR	Time Period
GSI/OFRIS	Strong-interact. matter at high baryon dens.	137.000,00	01/2004 – 12/2006
VH-VI-041	Dense hadr. matter and QCD phase trans.'s	107.200,00	04/2004 – 12/2006
EU/CT 2004-50607	Strong-interact. matter in ultrarel. HIC's	25.000,00	04/2004 – 03/2008
DFG/RI 118172-1	Instab.'s in supercond. & superfluid matter	125.100,00	01/2006 – 01/2008
DFG/UNG 113/174/0-1	Strongly interacting matter	47.000,00	04/2006 – 03/2009
BMBF/06FY153	Di-jet suppression	76.400,00	07/2006 – 06/2009
BMBF/06FY163	Hadrons in hot & dense nuclear matter	162.000,00	07/2006 – 06/2009
GSI/FRISCH	Chiral phase transition	169.400,00	01/2007 – 10/2010
GSI/EMMI	EMMI	554.000,00	04/2008 – 03/2013
DFG/445 SUA-113/280	Space-time evolution of nuclear matter	30.000,00	06/2008 – 12/2012
BMBF/06FY9092	Dissipative relativistic fluid dynamics	154.000,00	07/2009 – 09/2012
BMBF/06FY9091	Exotic states and phases	88.500,00	07/2009 – 06/2013
BMBF/06FY7106	Dissipative relativistic fluid dynamics	471.000,00	07/2012 – 06/2015
DFG/RI 1181/6-1	Baryons in an eff. chiral mod. w. 3 quark fl.'s	162.600,00	09/2014 – 08/2016
BMBF/05P15RFCA1	ALICE at High Rate	389.664,00	07/2015 – 06/2018
DFG/CRC-TR 211	Strong-interact. matter under extr. cond.'s	7.390.200,00	07/2017 – 06/2021
BMBF/05P18RFCA1	Ausbau von ALICE am LHC	466.096,00	07/2018 – 06/2021
BMBF/05P18RFFCA	Ausbau von CBM bei FAIR	99.144,00	07/2018 – 06/2021
DFG/CRC-TR 211	Project B03: Spin-Magnetohydrodynamics	181.600,00	07/2021 – 06/2025

Leadership:

Leader of a research group at the Institute for Theoretical Physics, Goethe University	01/2001 –
Spokesperson of the Virtual Institute VH-VI-041 "Dense Hadronic Matter and QCD Phase Transitions" of the Helmholtz Association	05/2005 – 09/2006
Chairman ("Dekan") of the Department of Physics, Goethe University	10/2008 – 09/2010
Chairman of the Board of Directors of the Frankfurt Institute for Advanced Studies	07/2009 – 12/2011
Spokesperson of the DFG-funded Collaborative Research Center CRC-TR 211 "Strong-interaction matter under extreme conditions"	07/2017 – 06/2021

Supervision of post-docs:

1.	Qun Wang* (now professor at USTC, Hefei, China)	2000 – 2005
2.	Azwinndini Muronga (now Dean of Science at Nelson Mandela U., Port Elizabeth, South Africa)	2002 – 2004
3.	Igor A. Shovkovy (now professor at ASU, Mesa, U.S.A.)	2002 – 2006
4.	Mei Huang * (now professor at IHEP/CAS, Beijing, China)	2003 – 2004
5.	Defu Hou* (now professor at CCNU, Wuhan, China)	2003 – 2004
6.	Tomoi Koide* (now professor at UFRJ, Rio de Janeiro, Brasil)	2003 – 2004, 2008 – 2010
7.	Agnes Mocsy* (now professor at Pratt U., New York, U.S.A.)	2003 – 2005
8.	Ralf Hofmann	2004 – 2005
9.	Masakiyo Kitazawa (now professor at Osaka U., Japan)	2005 – 2006
10.	Osamu Kiriyama	2005 – 2008

(* indicates Humboldt fellow)

Supervision of post-docs (continued):

11.	Tomas Brauner* (now professor at U. Stavanger)	2006 – 2010
12.	Giorgio Torrieri* (now professor at U. Estadual de Campinas, Brasil)	2006 – 2013
13.	Hiroaki Abuki* (now professor at Tokyo U. of Science, Japan)	2008 – 2009
14.	Harri Niemi	2008 – 2011, 2014 – 2017
15.	Xu-Guang Huang (now professor at Fudan U., Shanghai, China)	2008 – 2012
16.	Harmen Warringa*	2008 – 2012
17.	Elena Gubankova	2010 – 2012
18.	Lianyi He* (now professor at Tsinghua U., Beijing, China)	2010 – 2013
19.	Daniel Fernandez-Fraile*	2012 – 2014
20.	Francesco Giacosa (now professor at Kielce U., Poland)	2005 – 2014
21.	Armen Sedrakian (now professor at Wroclaw U., Poland)	2007 – 2016
22.	Pasi Huovinen (now post-doc at Inst. of Physics Belgrade, Serbia)	2009 – 2015
23.	Sixue Qin* (now professor at Chongqing U., China)	2012 – 2014
24.	Khaled Teilab	2012 – 2017
25.	Victor Roy* (now ass. professor at NISER, India)	2014 – 2016
26.	Shi Pu*	2014 – 2016
27.	Miklos Zetenyi	2014 – 2016
28.	Daisuke Sato*	2016 – 2018
29.	Stefan Rechenberger	2016 – 2018
30.	Enrico Speranza	2017 – 2020
31.	Leonardo Tinti (now professor at Kielce U., Poland)	2017 – 2020
32.	Etele Molnar	2017 – 2018
33.	Ralf-Arno Tripolt	2018 – 2020
34.	Lucia Oliva*	2019 – 2021
35.	Victor Ambrus*	2020 –
36.	Peter Lowdon	2020 –
37.	Ashutosh Dash*	2021 –

(* indicates Humboldt fellow)

Diploma and Master theses supervised:

1.	Dirk Röder	"Chirale Symmetrierestauration in linearen Sigma-Modellen mit $U(N_f)_r \times U(N_f)_\ell$-Symmetrie"	Goethe University	2003
2.	Stefan Rüster	"Farbsupraleitung in Quarksternen"	Goethe University	2003
3.	Barbara Betz	"Fermionische Quasiteilchenanregungen in Normal- und Supraleitern"	Goethe University	2005
4.	Stefan Strüber	"Selbstkonsistente In-Medium-Massen leichter, skalarer und vektorieller Mesonen in einem linearen σ-Modell"	Goethe University	2005
5.	Denis Parganlija	"Pion-Pion-Streuung in einem geeichten linearen Sigma-Modell mit chiraler $U(2)_R \times U(2)_L$-Symmetrie"	Goethe University	2006
6.	Martin Grahl	"The $O(N = 2)$ model in polar coordinates at nonzero temperature"	Goethe University	2009
7.	Achim Heinz	"Der Einfluss von Tetraquarkzuständen auf den chiralen Phasenübergang"	Goethe University	2009
8.	Elina Seel	"Darstellungsabhängigkeit der $O(2)$ σ-Modelle bei endlichen Temperaturen"	Goethe University	2009
9.	Stanislaus Janowski	"Phänomenologie des Dilatons in einem chiralen Modell mit (Axial-) Vektormesonen"	Goethe University	2010
10.	Anja Habersetzer	"Spectral densities of the τ lepton in a global $U(2)_L \times U(2)_R$ linear sigma model with electroweak interaction"	Goethe University	2011

Diploma and Master theses supervised (continued):

11.	Tim Kozlowski	"Expansionssimulation eines unitären Fermi-Gases mittels idealer Fluiddynamik"	Goethe University	2012
12.	Thilo Kalkbrenner	"$\beta = \ldots$? Hydrodynamische Aspekte eines stark wechselwirkenden entarteten Fermigases"	Goethe University	2013
13.	Lisa Olbrich	"Phenomenology of baryons in the extended linear sigma model"	Goethe University	2014
14.	Jürgen Eser	"Vector mesons in the linear sigma model within the functional renormalization group approach"	Goethe University	2015
15.	Florian Divotgey	"The low-energy constants of the extended linear sigma model at tree-level"	Goethe University	2015
16.	Phillip Lakaschus	"Exotic scalar mesons in the extended linear sigma model"	Goethe University	2017
17.	Jonas Schneitzer	"The low-energy constants of the 3-flavour extended linear sigma model at tree level"	Goethe University	2018
18.	Nora Weickgenannt	"Kinetic theory for massive spin-1/2 particles from the Wigner-function formalism"	Goethe University	2019
19.	Taylan Erdogan	"FRG-Zugang zum QM-Modell mit Spiegel-Nukleonen und dem ω-Meson"	Goethe University	2019
20.	Abdol Sabor Salek	"Functional renormalization group approach to the current-quark mass dependence of criticality within the two-flavour quark-meson model"	Goethe University	2019
21.	Niklas Cichutek	"Functional renormalization group approach to the quark-meson-diquark model in two-color QCD"	Goethe University	2020
22.	David Wagner	"Dissipative relativistic magnetohydrodynamics for polarizable fluids"	Goethe University	2020
23.	Lutz Kiefer	"Inhomogeneous condensation in the finite-mode regularized Gross–Neveu model"	Goethe University	2020

PhD theses supervised:

1.	Jonathan Lenaghan	"Effective theories for the chiral symmetry restoring phase transition in quantum chromodynamics"	Yale University	2000
2.	Jörg Ruppert	"Selbstkonsistente Beschreibung stark wechselwirkender Materie bei endlichen Temperaturen"	Goethe University	2003
3.	Andreas Schmitt	"Spin-one color superconductivity in cold and dense quark matter"	Goethe University	2004
4.	Christian Beckmann	"Self-consistent calculations of hadron properties at non-zero temperature"	Goethe University	2005
5.	Philipp Reuter	"A general effective action for quark matter and its application to color superconductivity",	Goethe University	2005
6.	Dirk Röder	"Selfconsistent calculations of mesonic properties at nonzero temperature"	Goethe University	2005
7.	Stefan Rüster	"The phase diagram of neutral quark matter"	Goethe University	2006
8.	Hossein Malekzadeh	"Three-flavor color superconductivity"	Goethe University	2007
9.	Jorge Noronha	"The role of gauge fields in cold and dense quark matter"	Goethe University	2007
10.	Basil Sa'd	"Bulk viscosity of spin-one color superconductors"	Goethe University	2008
11.	Barbara Betz	"Jet propagation and Mach-cone formation in (3+1)-dimensional ideal hydrodynamics"	Goethe University	2009
12.	Susanna Gallas	"Das Nukleon und sein chiraler Partner im Vakuum und in dichter Kernmaterie"	Goethe University	2010

PhD theses supervised (continued):

13.	Tian Zhang	"Study of QCD-like theories at nonzero temperatures and densitites"	Goethe University	2012
14.	Denis Parganlija	"Quarkonium phenomenology in vacuum"	Goethe University	2012
15.	Gabriel Denicol	"Microscopic foundations of relativistic dissipative fluid dynamics"	Goethe University	2012
16.	Mara Grahl	"Low-energy effective models for two-flavor QCD and the universality hypothesis"	Goethe University	2014
17.	Achim Heinz	"QCD under extreme conditions: inhomogeneous condensation"	Goethe University	2014
18.	Elina Seel	"Effective theories for QCD at nonzero temperature"	Goethe University	2014
19.	Walaa Eshraim	"Phenomenology of a pseudoscalar glueball and charmed mesons"	Goethe University	2015
20.	Stanislaus Janowski	"Phenomenology of glueballs and scalar-isoscalar quarkonia within an effective hadronic model of QCD"	Goethe University	2015
21.	Xin-li Sheng	"Wigner function for spin-1/2 fermions in electromagnetic fields"	Goethe U. & USTC Hefei	2019
22.	Jürgen Eser	"Momentum-dependent pion self-interactions from quantum fluctuations"	Goethe University	2020
23.	Florian Divotgey	"Niederenergiestudien effektiver Modelle stark wechselwirkender Systeme"	Goethe University	2020
24.	Phillip Lakaschus	"Inhomogeneous chiral condensates in low-energy color-superconductivity models of QCD"	Goethe University	2021

9 Merits in teaching and pedagogical competence

Teaching Experience:

Basic courses in Theoretical Physics:

Newtonian Mechanics	winter 2002/03, 2009/10, summer 2013, and winter 2016/17
Analytical Mechanics and Special Relativity	summer 2003, 2010, and 2017
Electrodynamics	winter 2003/04 and 2010/11
Introductory Quantum Mechanics	summer 2004 and 2011
Advanced Quantum Mechanics	winter 2004/05, summer 2012, 2015, and 2016
Statistical Mechanics	summer 2005 and winter 2011/12

Advanced Courses in Theoretical Physics:

Relativistic Quantum Mechanics	winter 2001/02
Quantum Field Theory I	summer 2002, winter 2005/06, 2007/08, 2013/14, 2017/18, and 2020/21
Quantum Field Theory II	summer 2006, 2008, 2014, 2018, and 2021
Statistical Field Theory	summer 2001, winter 2008/09, 2014/15, 2018/19, and 2021/22
General Relativity	winter 2019/20
Cosmology	summer 2020

10 Awards, prizes, honors

Diploma scholarship from the German National Academic Foundation	02/1985 – 07/1988
PhD scholarship from the German National Academic Foundation	01/1991 – 03/1993
Feodor–Lynen scholarship from the Alexander von Humboldt Foundation	01/1994 – 12/1995
Member of the Scientific Society at Goethe University	07/2002 –
Nominee for the 1822 University Prize for Excellence in Teaching	07/2005
Member of the Academia Europaea	10/2013 –

11 Other academic merits

Opponent at PhD defenses:
Graz U., Yale U., U. of Jyväskylä, Vrije U. Amsterdam, Charles U. Prague, and U. Trondheim

Referee for international peer-reviewed journals:
Physical Review, Nuclear Physics, Review of Modern Physics, Annals of Physics, Journal of Physics, and others

Member of editorial boards and steering committees:

Editorial board of Journal of Physics G	2000 – 2004
Editorial board of Nuclear Physics A	2001 – 2010
Working group "Phases of Nuclear Matter" for NuPECC Long-Range Plan	2002
ECT* Joint Financial Review Committee (representing Germany)	2013 –
ECT* Scientific Advisory Board	2016 – 2019
Working group "Properties of Strong-Interaction Matter" for NuPECC Long-Range Plan	2016

Reviewer for search committees:
U. Bielefeld, Technical U. Darmstadt, U. Heidelberg, and U. Giessen

Reviewer for tenure-track and promotion procedures:
Baruch College (City U. of New York), McGill U. (Montreal), U. of Alabama (Tuscaloosa), U. of Rochester (New York), Vanderbilt U. (Tennessee), and U. of Washington (St. Louis)

Reviewer for grant proposals:
DFG, DAAD, Alexander von Humboldt Foundation (Germany), EPSRC-STFC (U.K.), FWF (Austria), SNF (Switzerland), GACR (Czechia), DOE, NSF (U.S.A.), and NSERC (Canada)

Reviewer for research projects (interim review):
Helsinki Institute of Physics (Finland), 2004 and 2010

Member of review boards for funding agencies:

Engineering and Physical Sciences Research Council (EPSRC) Peer Review College	2005 – 2009
Review Committee "Hadron and Nuclear Physics" of the Federal Ministry for Education and Research (BMBF)	2012 – 2015

Invited talks:
I have given more than 50 invited talks at international workshops and conferences, among them:

plenary talk "What is the structure of the quark–gluon plasma near the critical temperature ?" at the Fifth Int. Conf. on Nucleus–Nucleus Collisions, Taormina, Sicily	1994
plenary talk "Hydrodynamics and collective behaviour in relativistic nuclear collisions" at "Quark Matter '96", Heidelberg, Germany	1996
plenary talk "Quark–Gluon Plasma" at the DNP 2000 meeting, Williamsburg, Virginia, U.S.A.	2000
plenary talk "Remarks on the extraction of freeze-out parameters" at "Quark Matter 2001", SUNY Stony Brook, U.S.A.	2001
plenary talk "A general effective theory for dense quark matter" at "Strong and Electroweak Matter 2004", Helsinki, Finland	2004
plenary talk "From kinetic theory to dissipative fluid dynamics" at the Int. Conference on "Strangeness in Quark Matter" SQM 2008, Tsinghua University, Beijing, China	2008
"Theory Summary" at the Int. Conference on "Strangeness in Quark Matter" SQM 2009, Buzios, Brasil	2009
Co-Rapporteur on "Global Variables and Correlations" at "Quark Matter 2012", Washington, D.C., U.S.A.	2012

Organization of Conferences:

I have participated in organizing 30 international workshops and conferences, among them:

co-organizer of "RHIC98 Summer Study", Brookhaven National Laboratory, U.S.A.	1998
member of Local Organizing and International Advisory Committee of "Strange Quark Matter 2001", Goethe University, Frankfurt	2001
co-organizer of the INT program "The first three years of heavy-ion physics at RHIC", Institute for Nuclear Theory, University of Washington, Seattle, U.S.A.	2003
member of the International Advisory Committee of "Strange Quark Matter 2003", Atlantic Beach, North Carolina, U.S.A.	2003
member of the International Advisory Committee of the 5th "International Conference on Physics and Astrophysics of the Quark-Gluon Plasma" (ICPA-QGP 2005), Kolkata, India	2005
co-chair of the Extreme Matter Institute (EMMI) workshop "Quark-Gluon Plasma Meets Cold Atoms", GSI Darmstadt, Germany	2008
co-chair of the Extreme Matter Institute (EMMI) workshop "Quark-Gluon Plasma Meets Cold Atoms: Episode II", Riezlern, Kleinwalsertal, Austria	2009
co-chair of "DM 2010", Int. Workshop on High Density Nuclear Matter, Cape Town, South Africa	2010
chair of the Extreme Matter Institute (EMMI) workshop "Quark-Gluon Plasma Meets Cold Atoms: Episode III", Hirschegg, Kleinwalsertal, Austria	2012
member of the International Advisory Committee of the series "International Conference on the Initial Stages in High-Energy Nuclear Collisions"	2013, 2014, 2016, 2017, 2021
member of the International Advisory Committee of the XXVI "International Conference on Ultrarelativistic Heavy-Ion Collisions" (QM2017), Chicago, U.S.A.	2017
co-organizer of the ECT* workshop "Functional Methods in Hadron and Nuclear Physics", ECT*, Trento, Italy	2017
member of the International Advisory Committee of the XXVII "International Conference on Ultrarelativistic Heavy-Ion Collisions" (QM2018), Venice, Italy	2018
co-organizer of the ECT* Doctoral Training Program "QCD under Extreme Conditions", ECT*, Trento, Italy	2018
co-organizer of the Extreme Matter Institute (EMMI) workshop "Functional Methods in Strongly Correlated Systems", Hirschegg, Kleinwalsertal, Austria	2019
member of the International Advisory Committee of the XXVIII "International Conference on Ultrarelativistic Heavy-Ion Collisions" (QM2019), Wuhan, China	2019
co-organizer of the ECT* (online) workshop "Spin and Hydrodynamics", ECT*, Trento, Italy	2020
member of the International Advisory Committee of the XXIX "International Conference on Ultrarelativistic Heavy-Ion Collisions" (QM2022), Cracow, Poland	2022

12 Scientific and societal impact of research

Research interests:

Fluid dynamics for relativistic heavy-ion collisions
Phase transitions in strongly interacting matter
Hadrons in the vacuum and in hot and dense strongly interacting matter

Publications:

218 citable publications, 172 peer-reviewed articles, 12437 citations (source: HEP-inspire)
1 paper over 500 citations, 8 papers over 250 citations, 38 papers over 100 citations, 78 papers over 50 citations, average no. of citations: 57.1, h-index: 61

Ten most cited original publications:

1. D.H. Rischke: "The Quark-Gluon Plasma in Equilibrium" (review article), Prog. Part. Nucl. Phys. 52 (2004) 197, *528 citations*
2. G.S. Denicol, H. Niemi, E. Molnar, D.H. Rischke: "Derivation of transient relativistic fluid dynamics from the Boltzmann equation", Phys. Rev. D 85 (2012) 114047, *389 citations*
3. O. Scavenius, A. Mocsy, I.N. Mishustin, D.H. Rischke: "Chiral phase transition within effective models with constituent quarks", Phys. Rev. C 64 (2001) 045202, *362 citations*
4. D.H. Rischke, M. Gyulassy: "The time-delay signature of quark-gluon plasma formation in relativistic heavy-ion collisions", Nucl. Phys. A 608 (1996) 479, *307 citations*
5. D.H. Rischke, M.I. Gorenstein, H. Stöcker, W. Greiner: "Excluded volume effect for the nuclear matter equation of state", Z. Phys. C 51 (1991) 485, *284 citations*
6. S.B. Rüster, V. Werth, M. Buballa, I.A. Shovkovy, D.H. Rischke: "The Phase diagram of neutral quark matter: Self-consistent treatment of quark masses", Phys. Rev. D 72 (2005) 034004, *262 citations*
7. D.H. Rischke, S. Bernard, J.A. Maruhn: "Relativistic hydrodynamics for heavy ion collisions. 1. General aspects and expansion into vacuum", Nucl. Phys. A 595 (1995) 346, *251 citations*
8. R.D. Pisarski, D.H. Rischke: "Color superconductivity in weak coupling", Phys. Rev. D 61 (2000) 074017, *243 citations*
9. H. Niemi, G.S. Denicol, P. Huovinen, E. Molnar, D.H. Rischke: "Influence of the shear viscosity of the quark-gluon plasma on elliptic flow in ultrarelativistic heavy-ion collisions", Phys. Rev. Lett. 106 (2011) 212302, *239 citations*
10. G.S. Denicol, T. Koide, D.H. Rischke: "Dissipative relativistic fluid dynamics: a new way to derive the equations of motion from kinetic theory", Phys. Rev. Lett. 105 (2010) 162501, *224 citations*

13 Positions of trust in society and other societal merits

Personal tutor for the German National Academic Foundation	2003 – 2019
Member of the Steering Committee of the "Stiftungsgastprofessur Wissenschaft und Gesellschaft" (sponsored by Deutsche Bank)	2014 –