Curriculum Vitae: Dr. Alexander Karl Rothkopf

Personal information

First name, Surname:	Dr. Alexander Karl Rothkopf		
Date of birth:	07.12.1982	Sex:	Male
Nationality:	German		
Researcher unique identifier(s) (ORCID, ResearcherID, etc.):	ORCID: 0000-0002-5526-0809; ResearcherID: Q-8026-2017; INSPIRE: 00328932		
Online presence:	http://www.alexrothkopf.de, @rothkopfAK		

Positions - current and previous

Year	Job title – Employer – Country
2021	**Full Professor** in Physics Department of Mathematics and Physics, University of Stavanger, Norway
2018-2021	Tenured Associate Professor in Physics Department of Mathematics and Physics, University of Stavanger, Norway
2016-2018	**PI and Scientific Manager** of Collaborative Research Center 1225 ISOQUANT Department of Physics and Astronomy, Heidelberg University, Germany
2014-2016	Postdoctoral Research Associate Department of Physics and Astronomy, Heidelberg University, Germany
2012-2014	Postdoctoral Research Associate Albert Einstein Center for Fundamental Physics, University of Bern, Switzerland
2011-2012	Postdoctoral Research Associate Faculty of Physics, Bielefeld University, Germany
2007	Visiting Researcher Department of Physics, School of Science, The University of Tokyo, Japan

Education

Year	Faculty/Department – University/Institution – Country
2018-2020	**Teaching and supervision skill development** programs "NyTi" and "UniPed", University of Stavanger, Norway
2017	**Management program** "Auf dem Weg zur Professur", Heidelberg University, Germany
2011	**Doctorate in Physics** (Japanese doctorates are not graded) Department of Physics, School of Science, The University of Tokyo, Japan University rank: national 1st, global 9th in science and 21st total (Shanghai Ranking)
2007	**Diploma in Physics (with distinction)** Department of Physics and Astronomy, Heidelberg University, Germany University rank: national 1st, global 39th in science and 46th total (Shanghai Ranking)

Awards

Year	Award – Occasion – Country
2020	**2019 Lyse Research Award** – Award for outstanding research at UiS – Norway
2015	**Nuclear Physics A Young Scientist Award** – XXV International Conference on Ultrarelativistic Nucleus-Nucleus Collisions (Quark Matter 2015) – Japan
2009	One out of 4 winners of a **university wide competition** for a six-month high-performance-computing budget at the University of Tokyo – Japan
2007	Full **doctoral course scholarship** and **stipend** by the Japanese Ministry of Science and Education (MEXT) and the German Academic Exchange Service (DAAD) – Germany

Project management experience

Year	Project owner – Project – Role – Funder
2022-2024	University of Stavanger – **Erasmus+ exchange with the University of Cape Town** [20k EUR] – Principal Investigator – European Commission
2022	Sejong University – **Korea-Nordic R&D network grant** [15k EUR] – Principal Investigator – National Research Foundation of Korea
2021	University of Stavanger – **Computer assisted and localized formative assessment in FYS100** [5k EUR] – Principal Investigator – University of Stavanger
2019-2023	University of Stavanger – **DeepRTP (FRIPRO)** [850k EUR] Ref: 286883 – Principal Investigator – Research Council of Norway (NFR) (https://deeprtp.uis.no)
2018-2020	University of Bergen – **Western Norway Network for Nuclear Matter Research** [25k EUR] – Principal Investigator – University and College Network for Western Norway
2018-	University of Stavanger – **Real-time dynamics of nuclear matter under extreme conditions** [10M Coreh] Ref: NN9578K-QCDrtX – Principal Investigator – Sigma2
2018	Heidelberg University – **COST THOR STSM travel grant** [1kEUR] – Principal Investigator – COST Association
2017	Heidelberg University – **Heisenberg Landau grant** with JINR, Dubna, Russia [8k EUR] – Principal Investigator – German Research Foundation (DFG)
2017	Brookhaven National Lab – **USQCD computing grant** [5.4M coreh] – Principal Investigator – Department of Energy, USA
2016-2020	Heidelberg University – **Probing the QCD phase structure with heavy quarks** [300k EUR] Ref: SFB1225 – Principal Investigator – German Research Foundation (DFG)
2016	Brookhaven National Lab – **USQCD computing grant** [10M coreh] – Principal Investigator – Department of Energy, USA

Summary of supervision (co-supervision)

Master's students	Ph.D. students	Postdoctoral fellows	University/institution - Country
3	2 (2)	1	Department of Mathematics and Physics, University of Stavanger, Norway
2 (2)	1 (1)	1	Department of Physics and Astronomy, Heidelberg University, Germany

Other relevant professional experiences

Year	Description – Role
2023-	**Elected representative** of the Norwegian nuclear physics community to **NuPECC**
2022-2026	**Member** of **The Young Academy of Norway**
2021-	**City coordinator** and **organizer** for the annual **Pint of Science** outreach festival
2020-2021	**Leadership role** in the development of a new PhD course portfolio at the Department of Mathematics and Physics, University of Stavanger, Norway
2019-	**Founding board member** and **vice-chair** of the JSPS alumni club Norway (ACN)
2019 -	**Social media coordinator** at the Department of Mathematics and Physics, UiS, Norway
2019	**Initiator and co-organizer** of the successful #futureofresearch open letter & signature campaign to the European Parliament, https://www.futureofresearch.eu
2018 -	**Referee** for the German Research Foundation and the Department of Energy (USA)
2018 -	**Member** of the Norwegian Physical Society
2017-2018	**Representative** of the postdoctoral researchers in the board of the Institute for Theoretical Physics, Heidelberg University, Germany
2011 -	**Referee** for Physical Review Letters, Physical Review D, Journal of High Energy Physics, Physics Letters B, Modern Physics Letters A and others
2001 -	**Member** of the German Physical Society

Recent invited talks, colloquia, and lectures

Year	Title – Type – Occasion
2022	"Real-time dynamics, inverse problems and lattice simulations" (review) – **Invited plenary talk** at the XVth Quark Confinement and the Hadron Spectrum Conference (**ConfXV**) Stavanger (Norway). 1 August – 6 August 2022;
2021	"Open-Quantum-Systems: Precision Thermometry at the Extremes" – **Invited Theoretical Physics Colloquium** at Arizona State University (online). 24 November 2021;
2021	"Thermal Field Theory" – **Invited lecture** at the 47th Heidelberg Physics Graduate Days, Heidelberg (Germany). 4-8 October 2021;
2021	"Strongly interacting systems at finite T: results from the lattice" (review) – **Invited plenary talk** at the Quarkonia meet dark matter workshop, Tokyo (online). 15-18 June 2021;
2020	"Open-Quantum-Systems: Precision Thermometry at the Extremes" – **Invited Physics Department Colloquium** at Kent State University (online). 24 September 2020;
2019	"Quarkonium production and suppression: Theory" (review); **Invited plenary talk** at the XXVIIIth International Conference on Ultrarelativistic Nucleus-Nucleus Collisions (**QM2019**), Wuhan (China), 3 – 9 November 2019;
2018	"Bayesian techniques and applications to QCD" (review) – **Invited plenary talk** at the XIIIth Quark Confinement and the Hadron Spectrum Conference (**ConfXIII**), Maynooth (Ireland). 31 July – 6 August 2018;
2018	"Real-time dynamics from lattice QCD: prospects and challenges" (representing UiS theory) – **Invited plenary talk** at the NuPECC annual workshop, Oslo (Norway). 15 June 2018;
2018	"Quarkonium" – **Invited lecture** at the student day of the XXVIIth International Conference on Ultrarelativistic Nucleus-Nucleus Collisions (**QM2018**), Venice (Italy). 13 – 19 May 2018;
2017	"Lattice EFT Methods for In-Medium Heavy Quarkonium" – **Invited lecture** at the Helmholtz Summer School at JINR, Dubna (Russia). 20 August – 2 September 2017;

Organization of conferences, workshops and schools

Year	Role – Event
2022	**Chair** of the **15th Quark Confinement and the Hadron Spectrum** conference, University of Stavanger, Norway (~250 participants)
2022	**Co-chair** of the **18th International Conference for QCD in extreme conditions** XQCD, NTNU, Norway (~80 participants)
2022	**Chair** of the **2022 PhD school for QCD in extreme conditions**, University of Stavanger, Norway (~30 participants)
2021-2022	**Convener** of the Hot and Dense Nuclear Matter track at the **2022 International Nuclear Physics Conference** INPC2022, Cape Town, South Africa (~750 participants)
2021	**Co-organizer** of an **ECT* workshop** on real-time challenges in strongly interacting systems, Trento, Italy (~70 participants)
2021	**Chair** of the **Virtual Tribute to Quark Confinement** conference, online (~400 participants)
2021	**Co-chair** of the biannual meeting of the **Norwegian Physical Society (Fysikermøte 2021)**, UiS, Norway (~100 participants)
2021	**Convener** of the heavy-ion track at the **9th Edition of the Large Hadron Collider Physics** Conference LHCP2021, online (~1000 participants)
2020	**Co-organizer** of an international **ACFI workshop** on real-time dynamics in QCD, University of Massachusetts Amherst, USA (~50 participants)
2019	**Co-organizer** of the Vestlandet network for nuclear matter research workshop "Quo-vadis QCD theory", University of Stavanger, Norway (~30 participants)
2017	**Organizer** of the **ISOQUANT Mini-Workshop** on Quarkonium real-time dynamics in relativistic heavy-ion collisions, Heidelberg University, Germany (~15 participants)
2017	**Co-organizer** of the **ISOQUANT Kick-Off workshop** at the Obergurgl University Center, Austria (~80 participants)
2016	**Co-Organizer** of "Workshop on QCD, Nonequilibrium Dynamics, Complex Systems, and Simulational Methods", Heidelberg University, Germany (~30 participants)

Summary of Scientific Output Measures (based on INSPIRE hep)

Total number of citations: 2175
Average number of citations per published paper: 48.3
H-index (h_{hep}) of published papers: 27

Refereed Journal Articles (44)

2022 *The complex heavy-quark potential in an anisotropic quark-gluon plasma — Statics and dynamics*
L. Dong, Y. Guo, A. Islam, A. R., M. Strickland, JHEP **09** (2022) 200

2021 *Static quark-antiquark interactions at nonzero temperature from lattice QCD*
[HotQCD collaboration] et.al., Phys.Rev.D **105** (2022) 5, 054513

Stable solvers for real-time Complex Langevin
D. Alvestad, R. Larsen, A. R., JHEP **08** (2021) 138

2020 *Proper static potential in classical lattice gauge theory at finite T*
A. Lehmann, A. R., JHEP **07** (2021) 067

Trace preserving quantum dynamics using a novel reparametrization-neutral summation-by-parts difference operator
O. Aalund et. al., J.Comput.Phys. **425** (2021) 109917

Thermalization and dynamical spectral properties in the quark-meson model
L. Shen, J. Berges, J. Pawlowski, A. .R., Phys.Rev.D **102** (2020) 1, 016012

Bryan's Maximum Entropy Method – diagnosis of a flawed argument and its remedy
A.R., Data 2020, **5**(3), 85

2019 *Heavy Quarkonium in Extreme Conditions*
A. R., Phys.Rept. **858** (2020) 1-117

Quantum Brownian motion of a heavy quark pair in the quark-gluon plasma
T. Miura, Y. Akamatsu, M. Asakawa, A. R., Phys.Rev.D **101** (2020) 3, 034011

Towards the nucleon hadronic tensor from lattice QCD
[XQCD collaboration] J. Liang et. al., Phys.Rev.D **101** (2020) 11, 114503

Improved Gauss law model and in-medium heavy quarkonium at finite density and velocity D. Lafferty, A. R., Phys.Rev.D **101** (2020) 5, 056010

Spectral Reconstruction with Deep Neural Networks
L. Kades et. al., Phys.Rev.D **102** (2020) 9, 096001

Reconstructing parton distribution functions from Ioffe time data: from Bayesian methods to Neural Networks
J. Karpie, K. Orginos, A. R., S. Zafeiropoulos, JHEP **1904** (2019) 057

2018 *Quarkonium in-medium properties from realistic lattice NRQCD*
S. Kim, P. Petreczky, A. R., JHEP **1811** (2018) 088

Lattice study of static quark-antiquark interactions in dense quark matter
N. Yu. Astrakhantsev et. al., JHEP **1905** (2019) 171

Quantum dissipation of a heavy quark from a nonlinear stochastic Schrödinger equation
Y. Akamatsu, M. Asakawa, S. Kajimoto, A. R., JHEP **1807** (2018) 029

Reconstructing the gluon
A. Cyrol, J. M. Pawlowski, A. R., N. Wink, SciPost Phys. **5** (2018) 065

Bayesian study of relativistic open and hidden charm in anisotropic lattice QCD
A. Kelly, A. R., J. I. Skullerud, Phys.Rev. D**97** (2018), 114509

2017 *Bayesian analysis of quark spectral properties from the Dyson-Schwinger equation*
C. S. Fischer, J. M. Pawlowski, A. R., C. Welzbacher, Phys.Rev. D**98** (2018), 014009

Bottomonium suppression using a lattice QCD vetted potential
B. Krouppa, A. R., M. Strickland, Phys.Rev. D**97** (2018), 016017

Dynamical dissociation of quarkonia by wave function decoherence
S. Kajimoto, Y. Akamatsu, M. Asakawa, A. R., Phys.Rev. D**97** (2018), 014003

Finite temperature gluon spectral functions from $N_f = 2 + 1 + 1$ lattice QCD
E. M. Ilgenfritz, J. M. Pawlowski, A. R., A. Trunin, Eur.Phys.J. **C**78 (2018) 127

2016 *Heavy-flavor production and medium properties in high-energy nuclear collisions - What next?*
G. Aarts et. al., Eur.Phys.J. A**53** (2017) 93

Bayesian inference of nonpositive spectral functions in quantum field theory
A. R., Phys.Rev. D**95** (2017) 056016

Thermal dynamics on the lattice with exponentially improved accuracy
J. Pawlowski, A. R., Phys.Lett. B**778** (2018) 221

Complex heavy-quark potential and Debye mass in a gluonic medium from lattice QCD
Y. Burnier, A. R., Phys.Rev. D**95** (2017) 054511

In-medium P-wave quarkonium from the complex lattice QCD potential
Y. Burnier, O. Kaczmarek, A. R., JHEP **1610** (2016) 032

2015 *Non-Abelian chiral instabilities at high temperature on the lattice*
Y. Akamatsu, N. Yamamoto, A. R., JHEP **1603** (2016) 210

Quarkonium at finite temperature: Towards realistic phenomenology from first principles
Y. Burnier, O. Kaczmarek, A. R., JHEP **1512** (2015) 101

A gauge invariant Debye mass and the complex heavy-quark potential
Y. Burnier, A. R., Phys.Lett. B **753** (2016) 232

2014 *Static quark-antiquark potential in the quark-gluon plasma from lattice QCD*
Y. Burnier, O. Kaczmarek, A. R., Phys. Rev. Lett. **114** (2015) 082001

Lattice NRQCD study of S- and P-wave bottomonium states in a thermal medium with $N_f = 2 + 1$ light flavors
S. Kim, P. Petreczky, A. R., Phys. Rev. D **91** (2015) 054511

A first look at Bottomonium melting via a stochastic potential
A. R., JHEP **1404** (2014) 085

2013 *Bayesian Approach to Spectral Function Reconstruction for Euclidean Quantum Field Theories*
Y. Burnier, A. R., Phys. Rev. Lett. **111** (2013) 182003

Light-cone Wilson loop in classical lattice gauge theory
M. Laine, A. R., JHEP **1307** (2013) 082

A hard thermal loop benchmark for the extraction of the nonperturbative $Q\bar{Q}$ potential
Y. Burnier, A. R., Phys. Rev. D **87** (2013) 114019

From Complex to Stochastic Potential: Heavy Quarkonia in the QGP
A. R., Mod. Phys. Lett. A **28** (2013) 1330005

2012 *Disentangling the timescales behind the non-perturbative heavy quark potential*
Y. Burnier, A. R., Phys. Rev. D **86** (2012) 051503

Improved Maximum Entropy Analysis with an Extended Search Space
A. R., J. Comp. Phys. **238** (2013)106

Stochastic potential and quantum decoherence of heavy quarkonium in the QGP
Y. Akamatsu, A. R., Phys. Rev. D**85** (2012) 105011

Complex Heavy-Quark Potential at Finite Temperature from Lattice QCD
A. R., T. Hatsuda, S. Sasaki, Phys. Phys. Rev. Lett. **108** (2012) 162001

2009 *Instability-induced fermion production in quantum field theory*
J. Berges, J. Pruschke, A. R., Phys. Rev. D**80** (2009) 023522

2008 *Non-thermal fixed points: Effective weak-coupling for strongly correlated systems far from equilibrium*
J. Berges, A. R., J. Schmidt, Phys. Rev. Lett. **101** (2008) 041603

2006 *A close look into the carbon disk at the core of the planetary nebula CPD-56 deg. 8032*
O. Chesneau et. al., Astr.&Astroph. **455** (2006)1009

Preprints (3)

2022 *Bayesian inference of real-time dynamics from lattice QCD*
A. R., arXiv:2208.13590

A new discretization technique for initial value problems based on a variational principle
A. R., J. Nordström, arXiv:2205.14028

2021 *Conserving Lattice Gauge Theory for Finite Systems*
A. R., arXiv:2102.08616

Conference Proceedings (39)

2021 *The complex potential from 2+1 flavor QCD using HTL inspired approach*
HotQCD collaboration et.al., PoS LATTICE**2021** (2022) 199

In-medium static quark potential from spectral functions on realistic HISQ ensembles
HotQCD collaboration et.al., PoS LATTICE**2021** (2022) 239

Static potential at non-zero temperatures from fine lattices
HotQCD collaboration et.al., PoS LATTICE**2021** (2022) 178

The QCD Equation of State in Small Systems
W. A. Horowitz, A. R., SciPost Phys.Proc. **10** (2022) 025

Conserving Lattice Gauge Theory for Finite Systems
A. R., PoS LATTICE**2021** (2022) 094

2020 *Quarkonium production and suppression: Theory*
A. R., Nucl.Phys.A **1005** (2021) 121922

Time Evolution of a Quarkonium towards the Thermal Equilibrium in the Quark-gluon Plasma
T. Miura, et. al., JPS Conf.Proc. **32** (2020) 010084

Real-Time-Evolution of Heavy-Quarkonium Bound States
A. Lehmann, A. R., PoS LATTICE**2019** (2019) 074

2019 *Quarkonium Phenomenology from a Generalised Gauss Law*
D. Lafferty, A. R., Universe **5** (2019), 119

Quarkonium Production in the QGP
A. R., Universe **5** (2019), 117

Study of deconfined quark matter at zero temperature and high density
N. Astrakhantsev et. al., PoS Confinement**2018** (2019) 154

Spectral properties of light and charm mesons from $N_f = 2 + 1$ anisotropic lattice QCD
R. Quinn et. al., PoS Confinement**2018** (2019) 272

In-medium heavy quarkonium from lattice NRQCD
S. Kim, P. Petreczky, A. R., PoS Confinement**2018** (2019) 157

Quantum dynamical dissociation of quarkonia by wave function decoherence in quark-gluon plasma
S. Kajimoto, Y. Akamatsu, M. Asakawa, A. R., Nucl.Phys. **A982** (2019) 711

Bayesian techniques and applications to QCD
A. R., PoS Confinement**2018** (2019) 026

2018 *Realistic in-medium heavy-quark potential from high statistics lattice QCD simulations*
P. Petreczky, A. R., J. Weber, Nucl.Phys. A**982** (2019) 735

Bottomonium suppression at RHIC and LHC
B. Krouppa, A. R., M. Strickland, Nucl.Phys. A**982** (2019) 727

2017 *Transversal and longitudinal gluon spectral functions from twisted mass lattice QCD with Nf=2+1+1 flavors*
E. M. Ilgenfritz, J. M. Pawlowski, A. R., A. Trunin, Phys.Part.Nucl.Lett. **15** (2018) 362

Improved real-time dynamics from imaginary frequency lattice simulations
J. M. Pawlowski, A. R., EPJ Web Conf. **175** (2018) 07001

High statistics study of in-medium S- and P-wave quarkonium states in lattice Non-relativistic QCD
S. Kim, P. Petreczky, A. R., Nucl.Phys. A**967** (2017) 724

2016 *Quarkonia at $T > 0$ and lattice QCD*
A. R., EPJ Web Conf. **137** (2017) 07018

What lattice QCD spectral functions can tell us about heavy quarkonium in the QGP
A. R., PoS ICHEP**2016** (2016) 362

A gauge invariant Debye mass for the complex heavy-quark potential
Y. Burnier, A. R., PoS LATTICE**2016** (2016) 028

2015 *In-medium quarkonium properties from a lattice QCD based effective field theory*
S. Kim, P. Petreczky, A. R., Nucl.Phys. A**956** (2016) 713

Lattice NRQCD study of quarkonium at non-zero temperature
S. Kim, P. Petreczky, A. R., PoS LATTICE**2015** (2016) 174

In-medium heavy-quarkonium from lattice QCD spectral functions
A. R., J.Phys.Conf.Ser. **668** (2016), 012026

Quark-gluon plasma phenomenology from anisotropic lattice QCD
J.-I. Skullerud it et. al. AIP Conf.Proc. **1701** (2016) 060018

2014 *The Bayesian reconstruction of the in-medium heavy quark potential from lattice QCD and its stability*
Y. Burnier, O. Kaczmarek, A. R., AIP Conf.Proc. **1701** (2016) 100017

Lattice NRQCD study on in-medium bottomonium spectra using a novel Bayesian reconstruction approach
S. Kim, P. Petreczky, A. R., AIP Conf.Proc. **1701** (2016) 060017

The in-medium heavy quark potential from quenched and dynamical lattice QCD
Y. Burnier, O. Kaczmarek, A. R., PoS LATTICE**2014** (2015) 220

NRQCD based S- and P-wave bottomonium spectra at finite temperature from $48^3 \times 12$ *lattices with* $N_f = 2 + 1$ *light HISQ flavors*
S. Kim, P. Petreczky, A. R., PoS LATTICE**2014** (2014) 208

2013 *Lattice NRQCD study of in-medium bottomonium states using* $N_f = 2 + 1$, 48^3 *HotQCD configurations*
S. Kim, P. Petreczky, A. R., PoS LATTICE**2013** (2014) 169

Towards understanding thermal jet quenching via lattice simulations
M. Laine, A. R., PoS LATTICE**2013** (2014) 174

A new Bayesian approach to the reconstruction of spectral functions
Y. Burnier, A. R., PoS LATTICE**2013** (2014) 490

Benchmarking the Bayesian reconstruction of the non-perturbative heavy $Q\bar{Q}$ *potential*
Y. Burnier, A. R., PoS LATTICE**2013** (2014) 491

2012 *Improved Maximum Entropy Method with an Extended Search Space*
A. R., PoS LATTICE**2012** (2012) 100

Heavy Quarkonium in the Quark Gluon Plasma from Effective Field Theories and Potentials
A. R., Nucl. Phys. A **910** (2013) 114

2010 *Proper heavy-quark potential from a spectral decomposition of the thermal Wilson loop*
A. R., T. Hatsuda, S. Sasaki, Soryushiron Kenkyu Electron. **118** (2010) A145

2009 *Proper heavy-quark potential from a spectral decomposition of the thermal Wilson loop*
A. R., T. Hatsuda, S. Sasaki, PoS LATTICE**2009** (2009) 162