Curriculum vitae: Prof. Dr. hab. David B. Blaschke

Date of birth: 22 September 1959

Citizenship: German

Address: Institut for Theoretical Physics
University of Wroclaw
Max Born pl. 9
50-204 Wroclaw, Poland

Tel: +48-71/375-9252
Fax: +48-71/321-4454
e-mail: blaschke@ift.uni.wroc.pl
http://www.ift.uni.wroc.pl/∼blaschke

Private Address:
ul. Podwale 1/13; 50-043 Wrocław, Poland

Education and Degrees obtained:

9/78 - 8/83	Student at the University of Rostock; Diploma Thesis in Theoretical Physics on: "Application of the method of functional integration to Coulomb systems"
9/83 - 10/85, 5/87 - 12/87	Ph.D. student at the University of Rostock, Ph.D. Thesis on: "Pauli-blocking effects in the equation of state for strongly interacting matter"
12/95	Habilitation Thesis on: "Quantum statistics of effective quark models of hadronic matter"
1/96	Private docent: "Theoretical Physics - Many-Particle Theory"
4/09	Professor title: "Professor of physical sciences"

Employment history:

1/88 - 8/91	Assistant at the Department of Physics, University of Rostock
9/91-8/92	Scientific associate at the Theory Division, CERN Geneva
7/92-12/96	Senior scientific associate at the research unit "Theoretical many-particle physics" of the Max-Planck-Society at the University of Rostock
1/97-8/98	Senior Assistant at the Department of Physics, University of Rostock
9/98-8/03	Professor for "Particle and Astrophysics", University of Rostock
since 3/01	Professor at the Bogoliubov Laboratory for Theoretical Physics, JINR Dubna
9/03-3/04	Visiting Professor at University of Rostock
4/04-2/05	Visiting Professor at University of Bielefeld
3/05-3/06	Visiting Scientist at GSI Darmstadt
4/06-9/06	Visiting Professor at University of Rostock
since 10/06	Professor for "Theoretical Physics", University of Wroclaw

Autoreferat: Prof. Dr hab. David Blaschke

My path of life is determined by the quest for uncovering basic laws and principles governing the phenomena of matter appearance. In particular, to make predictions about phase transitions in the system which might occur in response to extreme conditions of, e.g., temperatures, densities and strong fields provided in laboratory experiments or in the Cosmos.

During my studies at Rostock University I got acquainted with methods of thermodynamic Green functions in equilibrium and nonequilibrium quantum statistics, applied to the physics of strong correlations in nonideal plasmas. My Diploma thesis was devoted to the formulation of a Path Integral approach to collective modes (plasmons) and bound states in strongly correlated Fermion systems. Under the supervision of my teacher, Gerd Röpke, the dissolution of bound states under the influence of density and temperature (Mott effect) came into the focus of my scientific research.

My Ph.D. studies were partly performed at the JINR Dubna where I came in contact with leading physicists of the Bogoliubov and Landau schools, e.g., Dmitri Zubarev and Evgenii Lifshitz. I studied the quark model of hadrons and investigated the idea that quark deconfinement in hadronic matter under high compression could be described as a Mott effect, driven by the screening of the interaction and the Pauli exclusion principle. In my Ph.D. thesis on "The role of Pauli blocking effects in the equation of state for strongly interacting matter", I developed the corresponding approach (string-flip model) for hot and dense quark matter by postulating a saturation of confining interactions within a nearest neighbors using the thermodynamic Green functions technique.

After my Ph.D. in 1987, I developed further applications of the string-flip model approach to the study of the deconfinement transition in heavy-ion collisions, in cosmology and in neutron stars. Particularly interesting became the study of the J/ψ suppression effect in heavy-ion collisions, which I performed still before the first experimental results of the CERN NA38 collaboration appeared. Within the string-flip model I could derive in-medium cross sections for charmonium and bottomonium breakup and formulate a unified approach to heavy quarkonia suppression which suggested an increase of the suppression effect related to the quark deconfinement, later observed in the NA50 experiment as "anomalous" J/ψ suppression. A deeper understanding of the string-flip process in hadronic matter required the analysis of quark exchange processes between hadronic bound states, which I performed for the case of meson-meson interactions. My idea to apply this approach to quark exchange processes for a study of charmonium dissociation cross sections in hadronic matter led to a now well-known paper (above 100 citations) which stimulated further studies by several other groups.

After 1989, I could develop new scientific contacts and widen my scientific horizon. I count Jörg Hüfner (Heidelberg) and Helmut Satz (Bielefeld/CERN) as my postdoctoral sponsors. During my postdoctoral fellowship in the CERN Theory group (1991-92), I profited from contacts with leading scientists, in particular with John Ellis, Rolf Hagedorn and Helmut Satz. I was challenged by the necessity to develop my ideas for the QCD phase transition from the nonrelativistic Green function approach to a quantum field theoretical formulation.

The next stage of my scientific life was an appointment with the temporary research group for "Theoretical Many-Particle Physics" of the Max-Planck-Gesellschaft, led by Gerd Röpke in Rostock, where I prepared my habilitation thesis on "Quantum statistics for effective quark models of hadronic matter". I developed methods of finite-temperature quantum field theory for the study of strong correlations and phase transitions in Quantum Chromodynamics (QCD) at nonzero density and/or temperature. I used the path-integral approach for QCD motivated model field theories with a chiral quark sector of the Nambu–Jona-Lasinio type and generalized it to a nonlocal, separable 4-fermion coupling. The step to master chiral quark models was instrumental in describing the double nature of the pion as a quark-antiquark bound state and as a Goldstone boson of the broken chiral symmetry. With this approach I studied not only the modification of meson properties at finite temperatures and densities but also their Mott transition driven by the chiral phase transition.

After my habilitation in 1995, I started working on understanding aspects of deconfinement in strongly interacting matter on the basis of the QCD Schwinger-Dyson equation approach. I developed applications of this approach for finite temperatures and chemical potentials using different gluon propagator models and addressing the problem of the confinement-deconfinement transition. These works formed the basis for studies of the equation of state for quark matter and its applications for quark stars.

In 1998 I won the competition for a five-year assistant professorship on "Particle and Astrophysics" at the University of Rostock which gave a boost to my career: I developed my teaching skills, formed a research group and established international collaborations as well as contacts to scientific organizations. My closest collaborators were Hovik Grigorian (Yerevan), Yuri Kalinovsky (Dubna), Craig Roberts (Ar-

gonne) and Sebastian Schmidt (Rostock/ Tübingen). In this stage three major directions of my research were formed: (1) signals of QCD phase transitions in heavy-ion collisions, (2) quark matter in compact star interiors, and (3) particle production in strong fields, with the following achievements.

My main contribution to the still ongoing debate about the interpretation of the anomalous J/ψ suppression effect as a quark-gluon plasma signal is a quantum kinetic formulation of the charmonium lifetime. I applied the Kadanoff-Baym formalism of non-equilibrium Green functions to the treatment of rearrangement scattering between mesonic correlations (bound states or resonances) and could demonstrate that the spectral broadening of D-meson states due to their Mott effect at the chiral phase transition gives rise to a threshold-like enhancement of the J/ψ dissociation rate, thus explaining the anomalous suppression. I plan to study further consequences of the Mott transition for the explanation of strong coupling phenomena in the quark gluon plasma (sQGP), relevant for RHIC Brookhaven, CERN-LHC and upcoming GSI-FAIR and JINR-NICA experiments.

The second major research topic concerns the study of neutron stars with quark matter cores on the basis of microscopic approaches to the equation of state. In studies of the rotational evolution of accreting neutron stars in low-mass X-ray binaries, I developed the concept of a phase diagram for compact stars as a heuristic tool for identifying phase transitions in the neutron star interior by a population statistics. This could in future play a similar role as the well-known Hertzsprung-Russell diagram for ordinary stars. When studies of color superconducting quark matter were revived for nonperturbative dense QCD in 1998, I was among the first to discuss its role for magnetic fields and cooling of compact stars. Since these first works, I developed the description of structure and cooling of compact stars with color superconducting quark matter phases and corresponding observational tests to the international state-of-the-art. This expertise in the astrophysical constraints on the properties of matter at highest densities was acknowledged by the community and earned me invitations to conferences and symposia. Since 2004 I act as a coordinator of the European initiative for the "Physics of Compact Stars" (CompStar) which since 2008 receives funding as a Research Networking Programme of the European Science Fundation. In this position I strive to develop networking structures for studying and solving problems in the overlapping fields of neutron star-, heavy-ion collision- and gravitational wave physics with their respective strong experimental backgrounds.

The third main field in my spectrum of scientific research interests concerns the problem of vacuum pair production in strong fields which, more than 50 years after the exact QED prediction by Schwinger has not yet been seen in experiment. Starting from a quantum field theoretic formulation, I have developed a kinetic approach to particle production under nonequilibrium conditions and applied it to situations in heavy ion collisions, in cosmology and for modern high-intensity lasers. This latter application has entered to proposals for experimental verification in modern optical laser experiments.

In 2001 I was elected by the Scientific Council of the JINR Dubna as vice director of the Bogoliubov Laboratory for Theoretical Physics. Using this position (until 2007) I fostered international contacts and developed summer school programs for the training of young scientists in the field "Structure of Matter" with substantial financial support from German Institutions. In 2003, I became the first speaker of the Virtual Institute on "Dense hadronic matter and QCD phase transitions", joining six University groups with the GSI theory group. In this frame, I was appointed as a guest professor/scientist at the University Bielefeld (2004-2005) and the GSI Darmstadt (2005-2006) and could develop interdisciplinary collaborations on quarkonium dissociation using QCD lattice data and on the constraints for the nuclear equation of state from astrophysics and heavy-ion collisions.

In summer 2006 I won the competition for a permanent professorship at the University of Wroclaw and since October 2006 I hold this position. This first permanent position provided a solid basis to attack problems which deserve serious devotion and need sufficient experience with advanced methods of strong correlations in finite temperature quantum field theory. To this class belong the problems of Mott dissociation, e.g., of nuclear clusters into their nucleonic constituents and of nucleons into their quark constituents in hot and dense matter. The implementation of both effects within a new equation of state will result in major progress for simulations of both, upcoming heavy-ion collision experiments at high baryon densities (CBM @ FAIR and NICA @ JINR) and astrophysical processes such as compact star mergers and supernova collapse. I am glad that due to my educational path in science I am quite well-prepared for this challenge.

List of achievements in science and teaching

Citation index in SPIRES (May 2017):

- Total number of citable papers: 305 (157 published)
- Total number of citations: 6112 (5003 to published papers)
- Average citations per paper: 20.0 (31.9 to published papers)
- Famous papers (250-499 citations): 1 (1 published)
- Very well-known papers (100-249 citations): 13 (12 published)
- Well-known papers (50-99 citations): 18
- h-index: 39 (37 published)

Selected publications after habilitation:

- *Constraints on the high-density nuclear equation of state from the phenomenology of compact stars and heavy-ion collisions*
  (Phys. Rev. C **74** (2006) 035802; 266 citations)
  In this collaborative work of dense matter theorists and astrophysicists a scheme is developed for testing the high-density nuclear equation of state against a set of constraints from heavy-ion collision experiments and from compact star observations. Consensus between both communities, as demonstrated in this paper, is mandatory for sensible interpretation of data and narrowing theoretical predictions for the high-density behavior of the equation of state where the deconfinement transition is expected.

- *Composition and thermodynamics of nuclear matter with light clusters*
  (Phys. Rev. C **81** (2010) 015803; 230 citations)
  The novel feature of this work is to include the formation of clusters as well as their dissolution due to medium effects in a systematic way using two many-body theories: a microscopic quantum statistical (QS) approach and a generalized relativistic mean field (RMF) model. Nucleons and clusters are modified by medium effects. Both approaches reproduce the limiting cases of nuclear statistical equilibrium (NSE) at low densities and cluster-free nuclear matter at high densities. The treatment of the cluster dissociation is based on the Mott effect due to Pauli blocking, implemented in slightly different ways in the QS and the generalized RMF approaches, which are compared. The effect of cluster formation on the liquid-gas phase transition and on the density dependence of the symmetry energy is studied. The results are relevant for heavy-ion collisions and astrophysical applications.

- *The phase diagram of three-flavor quark matter under compact star constraints*
  (Phys. Rev. **D 72** (2005) 065020; 181 citations)
  By the end of 1997, a renaissance of the discussion of color superconductivity in quark matter began when two groups at Princeton (Wilczek et al.) and Stony Brook (Shuryak et al.) started to use nonperturbative models of the instanton (or NJL model) type for the 4-quark interaction and showed that diquark pairng gaps can be of the order of 100 MeV with correspondingly high critical temperatures. In the above paper we have performed for the first time a selfconsistent calculation of quark masses and diquark gaps within a three-flavor NJL model of quark matter and constructed the corresponding QCD model phase diagram. The result of this work suggests that both, color-flavor-locking (CFL) and gapless superconductivity phases are only of marginal importance for the physics of compact star evolution as they are supposed to occur only at high densities and temperatures, beyond typical values.

- *Diquark condensates and compact star cooling*
  (Astrophys. J. **533** (2000) 406; 128 citations)
  The effect of color superconductivity with large diquark pairing gaps on the cooling of quark stars is studied using kown as well as new (plasmon decay) quark-neutrino processes. This work laid the ground for numerous further, more detailed investigations of neutron star cooling with color superconducting quark matter cores by my group as well as competing groups.

- *Continuum study of deconfinement at finite temperature*
  (Phys. Rev. Lett **77** (1996) 3724; 109 citations)
  In this work we extended for the first time a confining, renormalisable, Dyson-Schwinger equation model of two-flavour QCD to finite temperatures within the Matsubara formalism. It is found that deconfinement and chiral symmetry restoration are coincident as they are both generated by the dynamical, renormalized quark mass function. This work served as a starting point for numerous further investigations of chiral symmetry breaking/restoration and confinement/deconfinement transitions using finite-temperature generalizations of the QCD Dyson-Schwinger equations.

- *Quark Matter in Compact Stars?*
  (Nature **445** (2007) E7; 133 citations)
  This paper is a contribution to the controversial discussion of the possibility of quark matter cores in compact stars which demonstrates that modern quark matter models can result in equations of state stiff enough to explain large neutron star masses of the order of 2 $M_\odot$. Recent hints from observations for such high compact star masses had lead to the premature conclusion that quark matter should be excluded as a structure of superdense matter in compact star cores.

- *Modern compact star observations and the quark matter equation of state*
  (Phys. Lett. **B 654** (2007) 170; 133 citations)
  We demonstrate in this paper how modern neutron star constraints for a large mass ($M \approx 2\ M_\odot$) and large radii ($R > 12$ km) can be fulfilled with a microscopically motivated hybrid equation of state, where the nuclear matter phase is obtained within the Dirac-Brueckner-Hartree-Fock (DBHF) approach using the Bonn-A potential and the quark matter phase is described by a 3-flavor Nambu–Jona-Lasinio model that accounts for scalar diquark condensation and both scalar and vector meson mean fields. This work forms a basis for the above publication in Nature.

- *A quantum kinetic equation for particle production in the Schwinger mechanism*
  (Int. J. Mod. Phys. **E 7** (1998) 709; 114 citations)
  A quantum kinetic equation including a non-Markovian source term for boson and fermion pair production in strong external fields is derived and solutions are discussed analytically and numerically. In this paper the well-known Schwinger mechanism for pair production in a strong external field is formulated for homogeneous, time-dependent fields as a kinetic equation where the non-Markovian character of the source term is due to the statistical factors of Bose-enhancement (bosonic fields) or Pauli-blocking (fermionic fields). This work is a foundation for numerous subsequent studies of applications to pair production in QED (e^+e^- pairs in laser colliders), QCD (η' pairs in heavy-ion collisions) and electroweak theory (W-boson pairs in cosmology).

Achievements applied in practice

The results obtained within the quantum kinetic approach for subthreshold e^+e^- pair production in optical lasers (Dynamical Schwinger effect) form the basis of (yet) two concrete proposals to their verification in the following experiments:

- The Astra-Gemini Laser system of the Rutherford Appleton Laboratory (STFC project)
  `http://www.clf.rl.ac.uk/Facilities/AstraWeb/AstraGeminiHome.htm`

- The European Extreme Light Infrastructure (ELI) project.
  `http://www.extreme-light-infrastructure.eu/High-field_5_2.php`
  (Experiments in preparatory phase)

Achievements in teaching and education of scientific workers

Curricular Lectures:

- Statistical Physics II (Summer Sem. (SS) 2017, U Wroclaw)
- Modern Problems in Nuclear Physics I+II (Winter Sem. (WS) 2016, SS 2017, NRNU (MEPhI) Moscow)
- Quantum field theory for quark and hadron matter (SS 2016, NRNU (MEPhI) Moscow)
- Quantum Electrodynamics (2014, 2015, 2016, U Wroclaw)
- Physics of Compact Stars (SS 2013, U Bielefeld)
- Theory of Particle Physics (SS 2012, U Wroclaw)
- Master student seminar (SS 2010, 2011, U Wroclaw)
- Quantum Field Theory I (SS 2007, 2008, 2009 U Wroclaw)
- Quantum Field Theory II (WS 2007, 2008, 2013 U Wroclaw)
- Advanced Quantum Mechanics (WS 2006 - 2011, U Wroclaw)
- Dense matter and Heavy-Ion Collisions (WS 2008, U Dubna)
- Problems of Theoretical Physics (SS 2006, U Rostock)
- Quantum Mechanics II (WS 2001-2003, U Rostock)
- Quantum Mechanics I (SS 2001-2003, U Rostock; WS 2004, U Bielefeld)
- Astrophysics (SS 1993-2003, U Rostock)

Facultative Courses:

- Introduction to Heavy Ion Collisions (SS 2015; U Wroclaw)
- Cluster expansions in Quantum Field Theory (WS 2012/13; U Wroclaw)
- Bound States in Quantum Field Theory (SS 2011, WS 2011/12; U Wroclaw)
- Jewels of Quantum Electrodynamics (SS 2010, 2011; U Rostock)
- General Relativity in Astrophysics (SS 2008; U Rostock)
- Astrophysics of Compact Stars (SS 2006; WS 2007, U Wroclaw)
- Quantum Field Theory for Matter under Extreme Conditions (WS 2006, U Wroclaw)
- Dense QCD Matter and Neutron Stars (SS 2004; U Rostock)
- General Relativity Theory (WS 2003; U Rostock)
- Particle- and Astrophysics (WS 1999-2003; U Rostock)
- Gauge Field Theory and Cosmology (SS 1999, U Greifswald)
- Introduction to Gauge Field Theories and Cosmology (WS 1998; U Rostock)
- Finite Temperature Field Theory (WS 1997; U Rostock)
- Relativistic Kinematics (WS 1996; U Rostock)
- Quantum Field Theory of Strong Interactions (WS 1994, 1995, 1996; U Rostock)
- Many-Particle Theory of Dense Nuclear Matter (WS 1992; U Rostock)

15 Guest lecturer appointments, e.g.

- Hadrons and Hadronic Matter in Chiral Quark Models (JINR Dubna, Russia, 09/11)
- Quantum Field Theory and Thermodynamics of Dense Matter (University of Rostock, Germany, 09/10)
- Equation of state for quark matter (International PhD School Catania, Italy, 04/09)
- Compact stars (International Graduate School Bielefeld-Paris, Paris, France, 03/09)
- Equation of state for compact stars (Doctoral Training Programme at ECT* Trento, Italy, 10/07)
- Finite Temperature QFT in Equilibrium and Nonequilibrium (University of Zagreb, Croatia, 03/06)
- Introduction to Modern Cosmology (University of Szczecin, Poland, 03/03)
- Finite-Temperature Field Theory (JINR Dubna, Russia, 02/03)
- Finite-Temperature Field Theory for Particle and Astrophysics (University of Nantes, France, 03/02)
- QCD Phase Transitions in the Evolution of Compact Stars (APCTP and National University Seoul, Korea, 01/02)
- Astrophysics: Compact Stars and Cosmology (University of Lulea, Sweden, 02/01)
- Quark-Hadron Phase Transition in HIC and Compact Stars (University of Zagreb, Croatia, 09/00)
- Deconfinement Phase Transition in Particle- and Astrophysics (University of Coimbra, Portugal, 02/00)

List of successful PhD students

1. H. Voß: *Thermodynamics und Phase Transitions of Quark-Hadron Systems in a Nonrelativistic Potential Model*, (1992, in German)

2. T. Towmasian: *Effective Hadron Properties at Finite Temperatures und Densities in a Relativistic Potential Model*, (1994, in German)

3. Sebastian Schmidt, Prof. Dr. rer. nat. habil.
   Nonlocal, Chiral Quark Model for Hadrons at finite Temperatures, (October 1995, in German)
   then Postdoc at Tel Aviv University (Israel), ANL Argonne (USA), University of Tübingen;
   then Director at Helmholtz Association (Germany)
   now Director of FZ Jülich (Germany) and Professor at Aachen University (Germany)

4. Konrad Martins, Dr. rer. nat.
   Meson-Meson Interactions in Effective Quark Models at Finite Temperatures, (May 1997)
   now Manager for Scientific Marketing, Research & Development at Saxonia Medical GmbH

5. Gevorg Poghosyan, Dr. rer. nat.
   Superdense Hybrid Stars & Protoneutron Star Evolution, (April 2000)
   then Postdoc at Univ. Basel (Switzerland); now Scientist at FZ Karlsruhe (Germany)

6. Gerhard Burau, Dr. rer. nat.
   J/ψ Dissociation and Deconfinement in Heavy-Ion Collisions, (December 2002)
   first Postdoc at Univ. Tübingen; now Scientist at Univ. Frankfurt

7. Daniel Behnke, Dr. rer. nat.
   Conf. Cosmology Approach & Problem of Dark Energy, (February 2004)
   then Referendar at Goethe Gymnasium Rostock (Germany)
   now Teacher at Gymnasium Eutin (Germany)

8. Deborah Aguilera, Dr. rer. nat.
   Color Superconducting quark matter in a two-flavor nonlocal chiral model under compact star constraints, (September 2005)
   then Postdoc at Univ. Alicante (Spain)
   now tenured position at CNEA Buenos Aires, TANDAR Lab. (Argentina)

9. Jens Berdermann, Dr. rer. nat.
   Equation of state and neutrino transport for superconducting quark matter in neutron stars, (July 2007)
   then Postdoc at DESY Zeuthen (Germany) in IceCube experiment; now Group Leader at German Aerospace Center Neustrelitz (Germany)

10. Tomasz Denkiewicz, Dr. rer. nat.
    Selected Aspects of Conformally Invariant Cosmology, (December 2007)
    then Postdoc at Univ. Szczecin (Poland)

11. Carlos Peña, Dr. rer. nat.
    Quantum Mechanical Model for Quarkonium Production in Heavy Ion Collisions, (June 2013)
    then Postdoc at Polytechnikum Wroclaw (Poland)

12. Sanjin Benić, Dr. rer. nat.
    Dynamical quark loops at low energies and in medium, (December 2013)
    then Postdoc at University of Zagreb (Croatia) and at University of Tokyo (Japan)

13. Daniel Zabłocki, Dr. rer. nat.
    Meson and diquark correlations in a chiral model for normal and color superconducting quark matter, (March 2015)
    then in Bavaria (Germany)

14. Rafał Łastowiecki, Dr. rer. nat.
    Nambu–Jona-Lasinio quark matter modeling for neutron star physics, (June 2015)
    then Analyst at McKinsey & Co., Wroclaw (Poland)

Organisation of more than 70 Conferences, Workshops and Schools, e.g.

- 39$^{\text{nd}}$ Max-Born Symposium: *Optics & its Applications*
  (Wroclaw, 2017, 5 days; with N. Gevorgyan and A. Masajada)
- 53$^{\text{rd}}$ Karpacz Winter School on Theoretical Physics: *Understanding the Origin of Matter from QCD*
  (Karpacz, 2017, 6 days; with C. Sasaki, L. Turko and K. Redlich)
- International Conference *Critical Point and Onset of Deconfinement*
  (Wroclaw, 2016, 5 days, with L. Turko, K. Redlich and C. Sasaki)
- International Conference *Strangeness in Quark Matter*
  (Dubna, 2015, 6 days, with A. Sorin, V. Kekelidze, V. Matveev et al.)
- 4$^{\text{th}}$ International Workshop on: *Compact Stars in the QCD Phase Diagram*
  (Prerow, 2014, 5 days; with T. Fischer, G. Martinez-Pinedo, G. Röpke, A. Sedrakian and J. Wambach)
- 32$^{\text{nd}}$ Max-Born Symposium and HECOLS Workshop: *Three Days on Phase Transitions in Heavy Ion Collisions, Compact Stars and Supernovae*
  (Wroclaw, 2014, 3 days; with P. Haensel and M. Oertel)
- 31$^{\text{st}}$ Max-Born Symposium and HIC for FAIR Workshop: *Three Days of Critical Behaviour in Hot and Dense QCD*
  (Wroclaw, 2013, 3 days; with M. Bleicher, L. McLerran and L. Turko)
- International Conference: *CompStar - the physics and astrophysics of compact stars*
  (Tahiti (French Polynesia), 2012, 5 days; with J.-P. Barriot, T. Frogier, E. Gourgoulhon, J. Margueron, P. Mery, T. Penilla y Perella, P. Pizzochero, L. Rezzolla, D. Zablocki)
- 48$^{\text{th}}$ Karpacz Winter School on Theoretical Physics: *Cosmic Matter in Heavy-Ion Collision Laboratories*
  (Laądek-Zdrój, 2012, 7 days; with L. Turko and K. Redlich)
- International Workshop: *Clusters in Nuclei, Nuclear Matter, Heavy-Ion Collisions and Astrophysics*
  (ECT* Trento, 2011, 1 week; with T. Klähn, G. Röpke, S. Shlomo and S. Typel)
- 28$^{\text{th}}$ Max-Born Symposium and HIC for FAIR Workshop: *Three Days on Quarkyonic Island*
  (Wroclaw, 2011, 3 days; with M. Bleicher, C. Greiner, K. Redlich and L. Turko)
- 8$^{\text{th}}$ International Conference: *Critical Point and Onset of Deconfinement - CPOD 2010*
  (Dubna, 2010, 5 days; with A. Sorin et al.)
- HIC for FAIR Summer School: *Dense QCD Phases in Heavy-Ion Collisions*
  (Dubna, 2010, 2 weeks; with M. Bleicher)
- HIC for FAIR Workshop: *Dense QCD Phases in Heavy-Ion Collisions and Supernovae*
  (Prerow, 2009, 3 days; with C. Greiner and J. Wambach)
- 26$^{\text{th}}$ Max-Born Symposium and EMMI Workshop: *Three Days of Strong Interactions*
  (Wroclaw, 2009, 3 days; with K. Redlich and L. Turko)
- 44$^{\text{th}}$ Karpacz Winter School on Theor. Physics & ESF Research Network Programme
  The Complex Physics of Compact Stars
  (Ladek Zdroj, 2008, 2 weeks; with L. Turko)
- Doctoral Training Programme: *Physics of Compact Stars*
  (ECT* Trento, 2007, 7 weeks; with J. Pons and L. Rezzolla)
- International Workshop: *The New Physics of Compact Stars*
  (ECT* Trento, 2005, 1 week; with J. Margueron, C. Pethick and J. Trümper)

- Helmholtz International Summer Schools (HISS) series
  (JINR Dubna, since 2004, 2 weeks each, 80 part.)
  Hot Points in Astrophysics and Cosmology (2004)
  Heavy Quark Physics (2004, 2018, 2012)
  Nuclear Theory and Astrophysical Applications (2005, 2007, 2011, 2014)
  Dense Matter in Heavy Ion Collisions and Astrophysics (2006, 2008, 2012, 2015)
  (with J. Wambach, V. Belyaev, K. Langanke, V. Voronov, A. Ali, M. Ivanov)

- NATO Advanced Research Workshop: *Superdense QCD Matter and Compact Stars*
  (Yerevan, 2003, 1 week; with D. Sedrakian)

- International Workshop: *Physics of Neutron Star Interiors*
  (ECT* Trento, 2000, 3 weeks; with N.K. Glendenning and A. Sedrakian)

- International Workshop: *Understanding Deconfinement in QCD*
  (ECT* Trento, 1999, 2 weeks; with F. Karsch and C.D. Roberts)

- WE-Heraeus Summer School: *Matter under extreme conditions in Plasma- and Astrophysics*
  (Rostock, 1999, 2 weeks; with G. Röpke and J. Wambach)

Editorial Board Member for Journals:

- European Physical Journal A (since 2013)
- Particles (since 2016)
- Universe (since 2017)

Refereeing for Scientific Organisations:

- European Science Foundation (ESF)
- Department of Energy (DOE, USA)
- National Science Foundation (NSF, USA)
- Netherlands Organisation for Scientific Research (NWO)
- Narodowe Centrum Nauki (NCN, Poland)
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Russian Science Foundation (RScF, Russia)
- Deutsche Forschungsgemeinschaft (DFG, Germany)
  - Collaborative Research Center / Transregio
  - Eastern Europe Programmes
  - Ph.D. and Postdoc positions
  - Research Groups
  - International Research Stipends
- Helmholtz Association
  - Helmholtz Alliances Program
  - Virtual Institute Program
  - Helmholtz Young Investigator Groups
- Alexander von Humboldt Foundation
- Volkswagen Foundation
- Higher School of Economy

Refereeing for scientific journals:

- Acta Physica Polonica B
- Annalen der Physik
- Astronomische Nachrichten
- Astronomy and Astrophysics
- Chinese Physics C
- Classical and Quantum Gravity
- Contributions to Plasma Physics
- European Physical Journal A, C
- Europhysics Letters
- Few Body Systems
- Fizika B
- International Journal of Modern Physics A, D, E
- Journal of Physics A: Mathematics and General
- Journal of Physics G: Nuclear and Particle Physics
- Journal of Statistical Physics
- Monthly Notices of the Royal Astronomical Society
- New Journal of Physics
- Nuclear Physics A, B
- Physics Letters A, B
- Physical Review C, D
- Physical Review Letters
- Progress in Theoretical Physics
- The Astrophysical Journal

Referee for 3 Professor Positions/Titles
Referee for 1 habil. Thesis
Referee for 14 Ph.D. Theses
Referee for 30 Diploma/Master Theses

Cooperation with scientific institutions and organizations

Memberships:

- Academia Europaea (since 2012, elected member)
- Polish Physical Society (since 2007)
- European Physical Society (since 1990)
- German Physical Society (since 1990)
- Physical Society of the GDR (1980 - 1990)

Professional Activities:

- Management Board Member in COST Action CA15213 "THOR" (2016 - 2020), `http://www.cost.eu/COST_Actions/ca/CA15213?`
- Management Board Member in COST Action MP1304 "NewCompStar" (2013 - 2017), `http://www.cost.eu/COST_Actions/mpns/Actions/MP1304`
- Coordinator of the Helmholtz International Summer Schools "Structure of Matter" (2004-2009, 2011-2013, 2014-2016), `http://theor.jinr.ru/~diastp/diasth/hiss.html`
- Chair of the ESF Programme "The New Physics of Compact Stars" (2008 - 2013), `http://www.esf.org/compstar`
- Co-Speaker of the European Initiative "Physics of Compact Stars" (2004-2008), `http://www.physik.uni-bielefeld.de/~blaschke/RTN04/`
- Vice Director of the Bogoliubov Laboratory for Theoretical Physics, JINR Dubna (2001-2007), `http://thsun1.jinr.ru`
- Co-Speaker of the Virtual Institute "Dense Hadronic Matter and QCD Phase Transitions" at GSI Darmstadt (2003-2006), `http://theory.gsi.de/Vir-Institute/`

Fellowships and guest positions

- Guest Scientist at J-PARC Centre Tokai, Japan (2/13)
- Guest Scientist at Universität Bielefeld (5/12)
- Guest Scientist at Helmholtz Centre Jülich (7/09)
- Guest Professor Univesity Zagreb, Croatia (3/06)
- Visiting Scholar at INT Seattle (3/00, 8/01, 6/04, 8/08)
- Visiting Scholar at APCTP Seoul, Korea (1/02, 11/03)
- Senior Fellow at ECT* Trento, Italy (9/00, 9/01)
- Guest Professor Univesity Coimbra, Portugal (2/00)
- Guest Scientist at Argonne National Lab. (3/97, 8/97, 10/98)

Projects with funding organizations: (Selection; *) part of a bigger project)

1. **BMBF** Heisenberg–Landau–Programme (since 1992) — 45.000 DM
   (Scientist Exchange with JINR Dubna, Russia)
   (Prof. M. Volkov, Dr. Yu. Kalinovsky, Dr. V. Yudichev, a.o.)
   Topics: *Bethe-Salpeter approach to light and heavy mesons*;
   Dyson Schwinger equation approach to confinement and dynamical chiral symmetry breaking, etc.

2. **DFG** Programme for Eastern Europe (since 1993) — 210.000 DM
   (Scientist exchange with JINR Dubna, Moscow State University, Saratov University, Bogoliubov Institute Kiev, Yerevan State University, ...)
   Topics: *Quark-Hadron Phase Transition in Neutron Stars*
   Production and Properties of Quarkonia and Heavy Mesons, u.a.

3. **Volkswagen - Foundation** Project (1996 - 1999) — 56.000 DM
   (Scientist exchange with Yerewan State University, Armenia)
   Title: "Dense hadronic matter and properties of compact astrophysical objects"

4. **DAAD - NSF** Scientist Exchange with USA (1997 - 1999) — 35.000 DM
   (Kent State University and ANL Chicago)
   Title: "Hadronic observables at finite temperature and density"

5. **DFG** Graduate School 567 (1999 - 2006) — 350.000 DM *)
   Leadership for Topics: "Charmonium Dissociation in hot, dense Matter"
   "Conformal Cosmology Approach & Problem of Dark Energy"
   "Equation of State and Neutrino Transport for Superconducting Quark Matter"
   "Selected Aspects of Conformally Invariant Cosmology"

6. **DAAD - NSF** Scientists exchange with USA (2001 - 2002) — 22.000 DM
   (Univ. of Pittsburgh and Univ. of Tennessee)
   Title: "Quark exchange processes in hot and dense hadronic matter"

7. **DAAD** Export of German Study Programs (2001 - 2003) — 125.000 DM
   Title: "Summer Schools for Many-Particle Physics in Dubna, Russia"

8. **DAAD** Partnerships with Eastern Asia (2002 - 2003) — 37.000 Euro
   Title: "Evolution of Astrophysical Many-Particle Systems (EAST)"

9. **NATO** Advanced Research Workshop (2003) — 30.000 Euro
   (together with Prof. D. Sedrakian)
   Title: "Superdense QCD Matter and Compact Stars"

10. **Helmholtz Association** Virtual Institute at GSI (2003 - 2006) — 780.000 Euro
    (Networking of Universities with Helmholtz Centers)
    (together with Prof. D. Rischke)
    Title: "Dense Hadronic Matter and QCD Phase Transition"

11. **DAAD - Antorchas** Exchange with Argentina (2004 - 2006) — 36.000 Euro
    (together with Prof. N.N. Scoccola)
    Title: "Quark matter and hadron properties at finite temperature and density"

12. **Helmholtz Association** Int. Summer Schools in Dubna
    (2004 - 2006) — 150.000 Euro
    (2007 - 2009) — 166.000 Euro
    (2011 - 2013) — 160.000 Euro
    (2014 - 2016) — 190.000 Euro
    Title: "Structure of Matter"
    (Int. Training Center for Young Scientists, together with DESY, GSI and JINR Dubna)

13. **MNiSW** Projects (Polish Ministry for Science and Education)
    (together with Prof. K. Redlich and Prof. L. Turko)

(2007 - 2010) 57.000 Euro
Title: "Charmonium Spectroscopy and Quark Gluon Plasma Formation"
(2009 - 2012) 64.000 Euro
Title: "Hadronic matter inside Compact Stars - a unified approach"
(2011 - 2013) 66.000 Euro
Title: "Microphysics of hadronic matter under extreme conditions"

14. **ESF** Research Networking Project (2008 - 2013) 400.000 Euro
(together with Prof. L. Rezzolla and Prof. P. Pizzochero)
Title: "The New Physics of Compact Stars (CompStar)"

15. **MNiSW** Project (2010 - 2013) 150.000 Euro *)
(together with Prof. P. Haensel)
Title: "The New Physics of Compact Stars"

16. **RFBR** (Russian Fund for Basic Research) Project (2011-2013) 3x800.000 Rubel
(together with Prof. V. Kekelidze and Prof. A. Sorin)
Title: "Search for new phases of QCD matter at the NICA accelerator complex at JINR"

17. **NCN** Projects (Narodowe Centrum Nauki)
Project "Maestro" (2012-2017) 1.949.000 Złoty
Title: "Dynamics of correlations in dense hadronic matter"
Project "Opus7" collaboration with Prof. P. Haensel (2015-2018) 450.000 Złoty
Title: "Compact stars: observations and the structure of their core"
Project "Opus8" (2015-2018) 396.480 Złoty
Title: "Quantum kinetics of particle production in strong fields"

18. **RScF** (Russian Science Fundation) Project (2017-2019) 18.000.000 Rubel
Title: "Matter under extreme conditions in heavy-ion collisions and neutron stars"

List of publications (David B. Blaschke)

Articles in refereed journals

Particles and Fields

1. *The Mott Mechanism and the Hadronic to Quark Matter Phase Transition*, **D. Blaschke**, G. Röpke, F. Reinholz and D. Kremp, Phys. Lett. **151 B** (1985) 439 - 444.

2. *Pauli quenching effects in a simple string model of quark/nuclear matter*, G. Röpke, **D. Blaschke** and H. Schulz, Phys. Rev. **D 34** (1986) 3499 - 3513. 55

3. *Quark Substructure Contribution to the Temperature - Dependent Effective Nucleon Mass*, G. Röpke, **D. Blaschke** and H. Schulz, Phys. Lett. **B 174** (1986) 5 - 9.

4. *Functional Integral Approach to a Many Fermion System with Bound States*, **D. Blaschke**, G. Röpke and H. Reinhardt, Ann. Phys. (Lpz.) **46** (1989) 327 - 340.

5. *Thermodynamics of quark matter with saturated confinement interactions*, C. Barter, **D. Blaschke** and H. Voß, Phys. Lett. **B 293** (1992) 423 - 429.

6. *Quark exchange contribution to the effective meson-meson interaction potential*, **D. Blaschke** and G. Röpke, Phys. Lett. **B 299** (1993) 332 - 337.

7. *On the chiral transition temperature in bilocal effective QCD*, **D. Blaschke**, Yu.L. Kalinovsky, V.N. Pervushin, G. Röpke and S. Schmidt, Z. Phys. **A 346** (1993) 85 - 86.

8. *Scalar–pseudoscalar meson masses in nonlocal effective QCD*, S. Schmidt, **D. Blaschke** and Yu.L. Kalinovsky, Phys. Rev. **C 50** (1994) 435 - 446. 71

9. *Low energy theorems in a nonlocal chiral quark model at finite temperature*, S. Schmidt, **D. Blaschke** and Yu.L. Kalinovsky, Z. Phys. **C 66** (1995) 485 - 490.

10. *Instantaneous Chiral Quark Model for Relativistic Mesons in a Hot and Dense Medium*, **D. Blaschke**, Yu.L. Kalinovsky, L. Münchow, V.N. Pervushin, G. Röpke and S. Schmidt, Nucl. Phys. **A 586** (1995) 711 - 733.

11. *Quark exchange model for charmonium dissociation in hot hadronic matter*, K. Martins, **D. Blaschke** and E. Quack, Phys. Rev. **C 51** (1995) 2723 - 2738. 130

12. *Anomalous pion decay in effective QCD at finite temperature*, **D. Blaschke**, M. Jaminon, Yu.L. Kalinovsky, P. Petrow, S. Schmidt and B. Van den Bossche, Nucl. Phys. **A 592** (1995) 561 - 580.

13. *$1/N_c$ - expansion of the quark condensate at finite temperature*, **D. Blaschke**. Yu.L. Kalinovsky, G. Röpke, S. Schmidt and M.K. Volkov, Phys. Rev. **C 53** (1996) 2394 - 2400. 40

14. *Continuum study of deconfinement at finite temperature*, A. Bender, **D. Blaschke**, Yu.L. Kalinovsky and C.D. Roberts, Phys. Rev. Lett **77** (1996) 3724 - 3727. 109

15. *Squeezed condensate of gluons and $\eta-\eta'$ mass difference*, **D. Blaschke**, H.-P. Pavel, V.N. Pervushin, G. Röpke and M.K. Volkov, Phys. Lett. **B 397** (1997) 129 - 132.

16. *Excess low energy photon pairs from pion annihilation at the chiral phase transition*, M.K. Volkov, E.A. Kuraev, **D. Blaschke**, G. Röpke and S. Schmidt, Phys. Lett. **B 424** (1998) 235 - 243. 53

17. *Thermodynamic properties of a simple, confining model*, **D. Blaschke**, C.D. Roberts and S. Schmidt, Phys. Lett. **B 425** (1998) 232 - 238. 101

18. *Deconfinement and Hadron Properties at Extremes of Temperature and Density* , **D. Blaschke** and C.D. Roberts, Nucl. Phys. **A 692** (1998) 197c - 209c.

19. *Analysis of chiral and thermal susceptibilities*, **D. Blaschke**, A. Höll, C.D. Roberts and S. Schmidt, Phys. Rev. **C 58** (1998) 1758 - 1766.

20. *Squeezed gluon condensate and quark confinement in the global colour model of QCD*, H.-P. Pavel, **D. Blaschke**, V. N. Pervushin and G. Röpke, Int. J. Mod. Phys. **A 14** (1999) 205 - 224.

21. *NJL model without q bar q thresholds*, **D. Blaschke**, G. Burau, M.K. Volkov and V.L. Yudichev, Sov. J. Nucl. Phys. **62** (1999) 1919 - 1923.

22. *Finite T meson correlations and quark deconfinement*, **D. Blaschke**, G. Burau, Yu.L. Kalinovsky, P. Maris and P.C. Tandy, Int. J. Mod. Phys. **A 16** (2001) 2267; [nucl-th/0002024]. 58

23. *Meissner effect for color superconducting quark matter*, D.M. Sedrakian, **D. Blaschke**, K.M. Shahabasyan and D.N. Voskresensky, Astrofizika **44** (2001) 443 - 454; [hep-ph/0012383].

24. *Chiral quark model with infrared cut-off for the description of meson properties in hot matter*, **D. Blaschke**, G. Burau, M.K. Volkov and V. Yudichev, Eur. J. Phys. **A 11** (2001) 319 - 327; [hep-ph/0107126].

25. *Meissner Effect for Color Superconducting Quark Matter*, D.M. Sedrakian, **D. Blaschke**, K.M. Shahabasyan and D.N. Voskresensky, Phys. Part. Nucl.**33** (2002) S100 - S105.

26. *Hadronic Spectral Function and Charm Meson Poduction*, **D. Blaschke**, G. Burau, T. Barnes, Yu. Kalinovsky and E. Swanson, Heavy Ion Physics **18** (2003) 49 - 57; [hep-ph/0210265].

27. *Coexistence of color superconductivity and chiral symmetry breaking within the NJL model*, **D. Blaschke**, M.K. Volkov and V.L. Yudichev, Eur. Phys. J. **A 17** (2003) 103 - 110; [astro-ph/0301065].

28. *Chiral Symmetry Restoration and Anomalous J/ψ Suppression*, **D. Blaschke**, G. Burau, Yu.L. Kalinovsky and V.L. Yudichev, Prog. Theor. Phys. Suppl. **149** (2003) 182 - 189.

29. *Abnormal number of Nambu-Goldstone bosons in the color-asymmetric 2SC phase of an NJL-type model*, **D. Blaschke**, D. Ebert, K.G. Klimenko, M.K. Volkov and V.L. Yudichev, Phys. Rev. **D 70** (2004) 014006; [hep-ph/0403151]. 60

30. *Thermodynamics of resonances with finite width*, **D.B. Blaschke**, K.A. Bugaev, Phys. Part. Nucl. Lett. **2**, 305 - 308 (2005).

31. *Color-spin locking phase in two-flavor quark matter for compact star phenomenology*, D. N. Aguilera, **D. Blaschke**, M. Buballa and V. L. Yudichev, Phys. Rev. **D 72** (2005) 034008; [hep-ph/0503288]. 55

32. *Heavy quark potential and quarkonia dissociation rates*, **D. Blaschke**, O. Kaczmarek, E. Laermann and V. Yudichev, Eur. J. Phys. **C 43** (2005) 81; [hep-ph/0505053].

33. *The phase diagram of three-flavor quark matter under compact star constraints*, **D. Blaschke**, S. Fredriksson, H. Grigorian, A. M. Öztas and F. Sandin, Phys. Rev. **D 72** (2005) 065020; [hep-ph/0503194]. 181

34. *Phase diagram of neutral quark matter in nonlocal chiral quark models*, D. G. Dumm, **D. B. Blaschke**, A. G. Grunfeld and N. N. Scoccola, Phys. Rev. **D 73** (2006) 114019; [hep-ph/0512218].

35. *Nonlocality effects on color spin locking condensates*, D. N. Aguilera and **D. B. Blaschke**, H. Grigorian, N.N. Scoccola, Phys. Rev. D **74** (2006) 114005; [hep-ph/0604196].

36. *Scalar Sigma Meson At A Finite Temperature In A Nonlocal Quark Model*, **D. Blaschke**, Yu. L. Kalinovsky, A. E. Radzhabov and M. K. Volkov, Phys. Part. Nucl. Lett. **3** (2006) 327–330.

37. *Nonlocality effects on spin-one pairing patterns in two-flavor color superconducting quark matter and compact stars applications*, D. N. Aguilera and **D. B. Blaschke**, Phys. Part. Nucl. Lett. **4** (2007) 351–364; [hep-ph/0512001].

38. *Equation of state for hybrid compact stars with a nonlocal chiral quark model*, A. G. Grunfeld, J. Berdermann, **D. B. Blaschke**, D. Gomez Dumm, T. Klähn and N. N. Scoccola, Int. J. Mod. Phys. **E 16** (2007) 2842 – 2846; arXiv:0705.3787 [hep-ph]

39. *Pseudoscalar meson nonet at zero and finite temperature*, D. Horvatic, **D. B. Blaschke**, D. Klabucar and A. E. Radzhabov, Phys. Part. Nucl. **39** (2008) 1033; [arXiv:hep-ph/0703115].

40. *Effects of mesonic correlations in the QCD phase transition*, **D. Blaschke**, M. Buballa, A.E. Radzhabov, M.K. Volkov, Sov. J. Nucl. Phys. **71** (2008) 2012 – 2018; [arXiv:0705.0384]. 72

41. *eta and eta-prime mesons in the Dyson-Schwinger approach using a generalization of the Witten-Veneziano relation*, D. Horvatic, **D. Blaschke**, Yu. Kalinovsky, D. Kekez, D. Klabucar, Eur. Phys. J. A **38** (2008) 257 – 264; [arXiv:0710.5650].

42. *Color neutrality effects in the phase diagram of the PNJL model* D. Gomez-Dumm, **D. Blaschke**, A.G. Grunfeld, N.N. Scoccola; Phys. Rev. D **78** (2008) 114021; [arxiv:0807.1660 [hep-ph]].

43. *Nonocality effects in the Phase Diagram of Neutral Quark Matter* A.G. Grunfeld, **D.B. Blaschke**, D. Gomez Dumm, T. Klähn, N.N. Scoccola, Phys. Part. Nucl. **39** (2008) 1034.

44. *Bound States and Superconductivity in Dense Fermi Systems* **D.B. Blaschke**, D. Zablocki, Phys. Part. Nucl. **39** (2008) 1010; arxiv:0812.0589 [hep-ph].

45. *Composition and thermodynamics of nuclear matter with light clusters*, S. Typel, G. Röpke, T. Klähn, **D. Blaschke** and H. H. Wolter, Phys. Rev. C **81** (2010) 015803; [arXiv:0908.2344 [nucl-th]]. 230

46. *Symmetry energy of dilute warm nuclear matter*, J.B. Natowitz, G. Röpke, S. Typel, **D. Blaschke**, A. Bonasera, K. Hagel, T. Klähn, S. Kowalski, L. Qin, S. Shlomo, R. Wada, H.H. Wolter; Phys. Rev. Lett. **104** (2010) 202501; arXiv:1001.1102 [nucl-th]. 100

47. *Nonlocal quark model beyond mean field*, **D. Blaschke**, M. Buballa, A. E. Radzhabov and M. K. Volkov; Phys. Part. Nucl. **41** (2010) 921. 55

48. *Nonlocal PNJL model beyond mean field and the QCD phase transition*, A. E. Radzhabov, **D. Blaschke**, M. Buballa, M. K. Volkov; Phys. Rev. D **83** (2011) 116004;[arXiv:1012.0664 [hep-ph]]. 55

49. *Width of the QCD transition in a Polyakov-loop DSE model*, D. Horvatic, **D. Blaschke**, D. Klabucar, O. Kaczmarek; Phys. Rev. D **84** (2011) 016005; [arXiv:1012.2113 [hep-ph]].

50. *Meson formfactor scheme for J/psi breakup cross sections in the Chiral Lagrangian approach*, **D. B. Blaschke**, H. Grigorian and Yu. L. Kalinovsky; Phys. Part. Nucl. Lett. **9** (2012) 18-34.

51. *Debye mass and heavy quark potential in a PNJL quark plasma*, J. Jankowski, **D. Blaschke**; Phys. At. Nucl. **75** (2012) 882 - 884; [arXiv:1110.0711 [hep-ph]].

52. *X(3872) as a D $\bar{D}^*$ molecule bound by quark exchange forces*, C. Peña, **D. Blaschke**; Acta Phys. Pol. Suppl. B **5** (2012) 963 - 969; [arXiv:1201.0309 [hep-ph]]

53. *D mesons at finite temperature and density in the PNJL model*, **D. Blaschke**, P. Costa, Y. .L. Kalinovsky; Phys. Rev. D **85** (2012) 034005; [arXiv:1107.2913 [hep-ph]].

54. *Nonlocal PNJL model beyond mean field*, **D. Blaschke**, M. Buballa, A. E. Radzhabov and M. K. Volkov; Phys. Atom. Nucl. **75** (2012) 738.

55. *Two- and three-color two-quark states in warm, dense quark matter*, D. S. Zablocki, **D. Blaschke** and M. Buballa; Phys. Atom. Nucl. **75** (2012) 910.

56. *Mott-Hagedorn Resonance Gas and Lattice QCD Results*, L. Turko, **D. Blaschke**, D. Prorok and J. Berdermann; Acta Phys. Polon. Supp. B **5** (2012) 485; [arXiv:1112.6408 [nucl-th]].

57. *Thermodynamic Instabilities in Dynamical Quark Models with Complex Conjugate Mass Poles*, S. Benic, **D. Blaschke** and M. Buballa; Phys. Rev. D **86** (2012) 074002; [arXiv:1206.6582 [hep-ph]].

58. *Cluster virial expansion for nuclear matter within a quasiparticle statistical approach*, G. Röpke, N. -U. Bastian, **D. Blaschke**, T. Klähn, S. Typel and H. H. Wolter; Nucl. Phys. A **897** (2013) 70; [arXiv:1209.0212 [nucl-th]].

59. *Pion dissociation and Levinson's theorem in hot PNJL quark matter*, A. Wergieluk, **D. Blaschke**, Y. .L. Kalinovsky and A. Friesen; Phys. Part. Nucl. Lett. **10**, 660 (2013); [arXiv:1212.5245 [nucl-th]].

60. *Chiral condensate in hadronic matter*, J. Jankowski, **D. Blaschke** and M. Spalinski; Phys. Rev. D **87**, no. 10, 105018 (2013); [arXiv:1212.5521 [hep-ph]].

61. *Phase diagrams in nonlocal Polyakov-Nambu-Jona-Lasinio models constrained by lattice QCD results,*, G. A. Contrera, A. G. Grunfeld and D. B. Blaschke; Phys. Part. Nucl. Lett. **11**, 342 (2014); [arXiv:1207.4890 [hep-ph]].

62. *Generalized Beth–Uhlenbeck approach to mesons and diquarks in hot, dense quark matter*, D. Blaschke, D. Zablocki, M. Buballa, A. Dubinin and G. Röpke; Annals Phys. **348**, 228 (2014); [arXiv:1305.3907 [hep-ph]].

63. *Medium induced Lorentz symmetry breaking effects in nonlocal PolyakovNambuJona-Lasinio models*, S. Benic, D. Blaschke, G. A. Contrera and D. Horvatic; Phys. Rev. D **89**, no. 1, 016007 (2014); [arXiv:1306.0588 [hep-ph]].

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65. *Polyakov-loop suppression of colored states in a quark-meson-diquark plasma*, D. Blaschke, A. Dubinin and M. Buballa; Phys. Rev. D **91**, no. 12, 125040 (2015); [arXiv:1412.1040 [hep-ph]].

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74. *Nuclear in-medium effects and neutrino emissivity of neutron stars*, **D. Blaschke**, G. Röpke, A.D. Sedrakian, H. Schulz and D. N. Voskresensky), Mon. Not. R. Astron. Soc. **273** (1995) 596 – 602.

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83. *Mapping deconfinement with a compact star phase diagram*, H. Grigorian, **D. Blaschke** and G. Poghosyan, Nucl. Phys. **A 715** (2003) 831 – 834; [nucl-th/0209068].

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EPJA Topical Issue **52** (8)(2016)

13. *15th International Conference on Strangeness in Quark Matter*
D. E. Alvarez-Castillo, **D. B. Blaschke**, V. D. Kekelidze, V. A. Matveev, A. S. Sorin (Eds.)
J. Phys. Conf. Ser. **668** (2016)

14. *Quantum Field Theory at the Limits: from Strong Fields to Heavy Quarks*
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