

Shanshan Cao

Affiliation: Institute of Frontier and Interdisciplinary Science, Shandong University

Address: 72 Bin Hai Road, Qingdao, Shandong, China 266237

Phone: (+86) 0532-58631305

E-mail: shanshan.cao@sdu.edu.cn

Webpage: <https://faculty.sdu.edu.cn/caoshanshan>

Education

2009 – 2014 **Doctor of Philosophy (Ph.D.) in Physics**
Duke University, Durham, USA

2005 – 2009 **Bachelor of Science (B.S.) in Physics**
Nanjing University, Nanjing, China

Research Experience

2020 – present **Professor**
Shandong University, Qingdao, China

2016 – 2020 **Postdoctoral Research Fellow**
Wayne State University, Detroit, USA

2014 – 2016 **Postdoctoral Research Fellow**
Lawrence Berkeley National Laboratory, Berkeley, USA

2009 – 2014 **Graduate Research Assistant**
Duke University, Durham, USA

2008 – 2009 **Undergraduate Research Assistant**
Nanjing University, Nanjing, China

Service to the Profession

- 2023, Organizer of *QCD and Medium to High Energy Nuclear Physics Summer School*, Qingdao, China
- 2023, International Advisory Committee member of *ExploreQGP Workshop*, Belgrade, Serbia
- 2023, Poster Prize Committee member of *LHCP 2023 Conference*, Belgrade, Serbia
- 2022, Organizer of *Jet Quenching in the Quark-Gluon Plasma Workshop*, Trento, Italy
- 2019-2020, Convener of the Statistics Working Group of the JETSCAPE Collaboration
- 2017-2018, Convener of the Physics Working Group of the JETSCAPE Collaboration

- 2015-2016, Convener of the Heavy Quark Working Group of the JET Collaboration

Teaching

- Fall 2023, Shandong University: Thermodynamics and Statistical Physics.
- Fall 2022, Shandong University: Thermodynamics and Statistical Physics.
- Spring 2022, Shandong University: Introduction of heavy-ion physics.
- Spring 2021, Shandong University: College Physics.
- Winter 2019, Wayne State University: Computational Physics.
- Spring 2013, Duke University: Introductory Mechanics.

Selected Publications

- S. Cao and G.-Y. Qin, *Medium response and jet-hadron correlations in relativistic heavy-ion collisions*, Annu. Rev. Nucl. Part. Sci. 73 (2023) 205.
- W.-J. Xing, G.-Y. Qin and S. Cao, *Perturbative and non-perturbative interactions between heavy quarks and quark-gluon plasma within a unified approach*, Phys. Lett. B 838 (2023) 137733.
- S. Cao and X.-N. Wang, *Jet quenching and medium response in high-energy heavy-ion collisions: a review*, Rept. Prog. Phys. 84 (2021) 2, 024301.
- S. Cao, et al., *Determining the jet transport coefficient q from inclusive hadron suppression measurements using Bayesian parameter estimation*, Phys. Rev. C 104 (2021) 2, 024905.
- S. Cao, K.-J. Sun, S. Liu, W.-J. Xing, G.-Y. Qin and C.-M. Ko, *Charmed hadron chemistry in relativistic heavy-ion collisions*, Phys. Lett. B 807 (2020) 135561.
- S. Cao, et al., *Toward the determination of heavy-quark transport coefficients in quark-gluon plasma*, Phys. Rev. C 99 (2019) 5, 054907.
- T. Luo, S. Cao, Y. He, and X.-N. Wang, *Multiple jets and γ -jet correlation in high-energy heavy-ion collisions*, Phys. Lett. B 782 (2018) 707-716.
- Y. Xu, J. Bernhard, S. Bass, M. Nahrgang and S. Cao, *Data-driven analysis for the temperature and momentum dependence of the heavy quark diffusion coefficient in relativistic heavy-ion collisions*, Phys. Rev. C 97 (2018) 1, 014907.
- S. Cao, et al., *Multistage Monte-Carlo simulation of jet modification in a static medium*, Phys. Rev. C 96 (2017) 2, 024909.
- W. Chen, S. Cao, T. Luo, L.-G. Pang and X.-N. Wang, *Effects of jet-induced medium excitation in γ -hadron correlation in $A+A$ collisions*, Phys. Lett. B 777 (2018) 86-90.
- S. Cao, T. Luo, G.-Y. Qin and X.-N. Wang, *Heavy and light flavor jet quenching at RHIC and LHC energies*, Phys. Lett. B 777 (2018) 255-259.
- S. Cao, T. Luo, G.-Y. Qin and X.-N. Wang, *A linearized Boltzmann transport model for jet propagation in the quark-gluon plasma: Heavy quark evolution*, Phys. Rev. C 94 (2016) 1, 014909.

- S. Cao, G.-Y. Qin and S.A. Bass, *Energy loss, hadronization and hadronic interactions of heavy flavors in relativistic heavy-ion collisions*, Phys. Rev. C92 (2015) 2, 024907.
- S. Cao, G.-Y. Qin and S.A. Bass, *Heavy quark dynamics and hadronization in ultra-relativistic heavy-ion collisions: collisional versus radiative energy loss*, Phys. Rev. C88 (2013) 044907.
- S. Cao and S.A. Bass, *Thermalization of Charm Quarks in Infinite and Finite QGP Matter*, Phys. Rev. C84 (2011) 064902.

Selected Talks

- 05/23/2023 *Recent developments in heavy-ion theory*, an **invited (plenary)** talk at **LHCP 2023**, Belgrade, Serbia
- 11/07/2021 *Jet and heavy-flavor physics in heavy-ion collisions*, an **invited (plenary)** talk at **ATHIC 2021**, Incheon, South Korea
- 11/08/2019 *Heavy quark transport: a theoretical overview*, an **invited (plenary)** talk at **Quark Matter 2019**, Wuhan, China
- 10/01/2018 *Open heavy-flavor probes of QCD matter (theory overview)*, an **invited (plenary)** talk at **Hard Probes 2018**, Aix-Les-Bains, France
- 08/01/2018 *Heavy quark energy loss and hadronization*, an **invited** talk at **Electron-Ion Collider User Group Meeting 2018**, Washington D.C., USA
- 06/01/2018 *Heavy flavor jet quenching at RHIC and LHC energies*, an **invited** talk at **CIPANP 2018**, Palm Springs, USA
- 11/28/2017 *Probing the perfect fluid in relativistic nuclear collisions*, an **invited physics colloquium**, East Carolina University, USA
- 06/27/2016 *Medium modification of open heavy flavor production in heavy-ion collisions*, an **invited (plenary)** talk at **SQM 2016**, Berkeley, USA
- 07/02/2015 *Theoretical progress on open heavy flavors in heavy-ion collisions*, an **invited (plenary)** talk at **Hard Probes 2015**, Montreal, Canada
- 05/22/2015 *Suppression, flow and two-particle correlations of open heavy flavor in relativistic nuclear collisions*, an **invited** talk at **CIPANP 2015**, Vail, USA

Awards

- *Publons Peer Review Awards 2018*, Publons, Year 2017-2018.
- *Katherine Goodman Stern Fellowship*, Duke University, Year 2013-2014.
- *Graduate Teaching Fellowship in Physics*, Duke University, Year 2012-2013.