

DR. CARLA FRÖHLICH

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Professional Appointments

North Carolina State University, Raleigh, NC

2016 – present **Associate Professor**, Department of Physics

2010 – 2016 **Assistant Professor**, Department of Physics

The University of Chicago, Department of Astronomy and Astrophysics and Enrico Fermi Institute

2007–2010 **Enrico Fermi Postdoctoral Fellow**

Also: Associate Postdoctoral Fellow at Kevli Institute for cosmological Physics

Education

2003 – 2007 **University of Basel, Switzerland**

Ph.D. in Theoretical Physics (April 2007)

Thesis: “The Role of Neutrinos in Explosive Nucleosynthesis in Core Collapse Supernova Models with Neutrino Transport” (Advisor: Prof. Dr. Friedrich-Karl Thielemann)

Distinction: summa cum laude

1997 – 2003 **University of Basel, Switzerland**

Diploma (Master Degree), Physics & Computer Science (February 2003)

Thesis: “Global Alpha-Nucleus Potentials Close to the Coulomb Barrier”

Distinction: 5.9 out of 6.0

2000 – 2001 **Simon Fraser University and TRIUMF, Vancouver, Canada**

Exchange student and Summer researcher

Project: “Charge State Distributions of reaction products from a radioactive reactant and an extended gas target with DRAGON at TRIUMF” (Advisor: Prof. Dr. J. D’Auria)

Awards and Honors

2020 Outstanding Teacher Award, NC State University

2019 University Faculty Scholar, NC State University

2015 Scialog Fellow Time-Domain Astrophysics, Research Corporation for Science Advancement

2014 Cottrell Scholar, Research Corporation for Science Advancement

2013 CAREER Award, US Department of Energy

2011 Ralph E. Powe Award, Oak Ridge Associated Universities

2007 SPS Dissertation Prize, Swiss Physical Society (SPS)

Current Research Interests

Supernovae: Core-collapse SNe, pair-instability SNe. Hydrodynamic modeling, mixing, progenitor-remnant connection, explodability.

Multi-messenger signals: nucleosynthesis, neutrinos, electromagnetic signals.

Abundances: Galactic chemical evolution, abundance signatures in metal-poor stars

Nuclear and neutrino physics: neutrino physics including oscillations, nuclear reactions in astrophysical applications

Publications

Total of **36** refereed publications (plus **1** additional manuscripts under review), **1** book chapter, and **29** conference proceedings (as of April 2020).

Invited talks

Total of **67 invited talks** and **3 invited lectures** at international training schools (as of April 2020).

Collaboration Membership and Professional Membership

Co-I and member of the steering committee of “International Research Network for Nuclear Astrophysics (IReNA)” funded by NSF’s AccelNet Program

Senior member of JINA-CEE: NSF Physics Frontiers Center for Nuclear Astrophysics. Liaison to ChETEC.

Member of the European COST-Action Program “ChETEC: Chemical Elements as Tracers of the Evolution of the Cosmos”

Member of the ISSI-BJ Initiative “Radioactive Nuclei in the Cosmos and in the Solar System”

Member of the American Physical Society: Division of Nuclear Physics, Division of Astrophysics

Member of the American Astronomical Society

Outreach Activities

Public talks:

- 100 Years of NCSU Physics (Nov 2017) “Silver, Gold, and Gravitational Waves”
- Asheville Astronomy Club (Feb 2014, Audience: 91) “Our Stellar Origins: The life and afterlife of stars”
- Raleigh Astronomy Club, Raleigh, NC (February 2012) • Pints of Science talk (Raleigh, Oct 2013) “Origin of Elements and Dark Matter”

Host for job shadowing opportunities for Middle School students (2012 – present)

Astronomy Days at the NC Museum of Natural Sciences, Raleigh, NC (2013, 2014)

Science Column in the News & Observer on Dark Matter and Dark Energy (2012)