



Friederike Bock

Eugene P. Wigner Fellow

Where and when did you earn your PhD?

I earned my PhD through a joint program of Lawrence Berkeley National Laboratory and the University of Heidelberg.

What was the subject of your dissertation?

My dissertation focused on heavy ion physics and establishing the point at which the quark-gluon plasma can be seen during heavy nucleus collisions.

What was your dissertation's major contribution to your field?

My work established new techniques aimed at reducing uncertainty in collision systems with variable thermal signal strengths. My project represented the first effort to look at direct photons in proton-proton and proton-lead collisions at the Large Hadron Collider (LHC) at CERN, the European Organization for Nuclear Research, in Switzerland.

Who is your ORNL mentor and where are you working on campus?

My mentor is Tom Cormier, who leads the Relativistic Nuclear Physics Group in the Physics Division. I am working in the Physics Division, Physical Sciences Directorate.

What does your fellowship research focus on?

My work focused on producing very precise measurements of the photon signal in heavy ion and intermediate collision systems and on building a new detector that I hope will unveil a new state of matter, gluonic matter, in currently uncharted phase space areas.



What are your research interests?

My ongoing research interests include understanding photons from a more phenomenological perspective, thus bridging the gap to theoretical calculations.

What led you to science and your specific discipline?

I was curious from the start. My mother is a mathematics and physics teacher, and my father is an engineer, so it was kind of in the cards that I would go into science. I always knew I wanted to do some kind of physics because fascinates me how we can see the universe expand and then directly link this to subatomic particles. On holidays, I took physics, astrophysics, and quantum mechanics courses. I actually knew I wanted to study astrophysics when I was 15. I took a trial course at University of Heidelberg when I was 16, attending lectures and speaking with students. I chose to pursue heavy ion physics because it connects very well with the study of the early beginnings of the universe, allowing me to examine the possibility of generating the same physical states that existed early on.

What did you do before coming to ORNL?

While I was doing my experiments on the LHC at CERN, I engaged in educational outreach, giving tours of the experiment. I also went back to my high school to talk to students.

Could you share an interesting fact or two about yourself?

I compete with my horse Leon, a chestnut-colored German half Trakehner in cross country, dressage and normal jumping. The two of us have really grown up together: I assisted at his birth and have raised him since he was 2 years old (he's now 19). I also enjoy drawing, including creating illustrations for her physics presentations. I love surprising friends and relatives with paintings or drawings as presents. Lots of times, the paintings end up being very realistically drawn objects, people, or animals, but in rather unconventional configurations as my imagination likes to run a bit wild.