HIGHLIGHTS 2024

The DNRF Chair grant on **Black hole spectroscopy in the gravitational-wave era** started in October 2022. Since then, we have established **ground-breaking research results** and **cemented leadership in the field** of black hole spectroscopy. In 2024, we established perturbation theory in a fully relativistic setting of black holes surrounded by nontrivial environments. These results are re-shaping the field, and all Strong articles on this matter are top-cited works. We lead the white paper (i.e. documenting the science and challenges ahead) for the international collaboration on the next-generation Event Horizon Telescope. The Strong group published over 40 papers in leading international journals, including articles in high-profile journals (e.g. Nature Astronomy, Physical Review Letters and Physical Review D Letters). Postdoc Shilpa Kastha joined the Saha Institute of Nuclear Physics in India as an Associate Professor, and we hired scientific assistant Gowtham Rishi Mukkamala. His work with postdoc David Pereñiguez on a new formulation of perturbations of black hole spacetimes resulted in a publication that has attracted attention by the community.

Strong organized 3 high-profile **international events**: **i. The New Horizons for Psi** school and workshop in Lisbon, where many PhD students attended; **ii. The Ringdown Inside and Out** meeting hosted at the Danish Architecture Center in Copenhagen, an invitation-only meeting gathering some of the world experts on black hole spectroscopy. As a consequence, the Center Leader is now leading a community review, co-authored by many of the participants, on the status of the field; **iii. The Black Holes Inside and Out (BHIO)** conference hosted at the Black Diamond, the largest conference in the field, which brought around 250 participants in person to Copenhagen and more than 270 online participants each day (in fact, as many as 452 on the first day), to discuss black holes.

In terms of **outreach efforts**, the BHIO conference attracted considerable international coverage (New Scientist and the American Physical Society). During the conference, a British youtuber, Phil Halper produced a number of videos with the Center Leader and some of the legends in the field, and we established the #blackholeweek in Copenhagen with several outreach events. In 2024, the Center Leader published a book, *The Eclipse of Time*, directed at the general public and young students, on the life of a scientist and on the physics of black holes. We hosted three artists during 2024, whose interactions with the team showed us different ways of perceiving reality and communicating our work. Outcomes were an art-piece on-site that communicates gravitational-wave physics and a video (in production) on the magic of science. Strong PhD students organized the PhD Day 2024, with talks by PhD students, talks from resident artists and senior members on job applications, career choices and public speaking.

In 2024, the Center Leader was awarded **the ULisboa Award** for his 'extraordinary contributions to theoretical physics and to scientific progress on a global scale'. Previous awardees include António Guterres, the secretary-general of the United Nations, in 2020. Professor Cardoso was also appointed to the **Max Planck Advisory Board**. At the BHIO conference, participants voted for the best posters and the winners were Jaime Redondo Yuste, Marina de Amicis and Conor Dyson, all Strong PhD students. We also highlight PhD Student Jaime Redondo Yuste who won the PSI 15th Anniversary Reunion Pitch Grant at the Perimeter Institute, Canada.