



ICTP | International Centre for Theoretical Physics
SAIFR | South American Institute for Fundamental Research

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October 16 – 25, 2024

**ICTP-SAIFR/EXOHADE
SCHOOL ON FEW-BODY
PHYSICS: NUCLEAR
PHYSICS FROM QCD**

Strongly interacting few-body systems are prevalent in many areas of nuclear and particle physics, from understanding the nuclear reactions responsible for the energy production in stars, to the observed emergent scaling behavior of three-body interactions. Tremendous progress has been made in establishing rigorous connections between nuclear few-body reactions to the fundamental degrees of freedom of Quantum Chromodynamics (QCD). Modern research in few-body phenomena requires a synergistic approach between various techniques from scattering theory, effective field theories, and lattice field theories to provide a global framework to compute non-perturbative observables from low-energy QCD.

The school will consist of four 4-hour courses on the topics of relativistic scattering theory, effective field theories (EFTs), lattice methods (both EFT and QCD), and finite-volume physics. Included in this course are practical exercise sessions to apply these tools to examples common for the study of few-body hadron and nuclear processes. Additionally, there will be a virtual three-day course before the school to prepare the participants on the fundamentals of non-relativistic scattering theory, particle and nuclear physics, and field theory.

Opportunity of paid internship at the University of California, Berkeley: At the end of the school, students will take an exam on the topics covered. Based on their exam scores, the top student(s) may be chosen to receive an all-expenses paid research internship from June-August 2025 at the University of California in Berkeley, California, USA. Paid expenses include lodging, travel, and visa fees. The student will be matched with a research mentor, who will guide them during their two-month internship. Furthermore, the student will be invited to participate in the next summer school and workshop hosted by the ExoHad collaboration, which is sponsored by the U.S. Department of Energy.

There is no registration fee and limited funds are available for travel and local expenses.

Application deadline: August 10, 2024

Online application and more information:
ictp-saifr.org/sfbp2024



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