# HK 1: Invited Talks - I

Time: Monday 11:00–12:30 Location: H1

**Invited Talk** HK 1.1 Mon 11:00 H1

**Recent results of collinear laser spectroscopy in the vicinity of the magic tin isotopes** — •Liss Vázquez Rodríguez — Experimental Physics Department, CERN, 1211 Geneva 23, Switzerland — Max-Planck-Institut für Kernphysik, 69117 Heidelberg, Germany

High-resolution collinear laser spectroscopy has been performed in a long sequence of tin (Z=50) species, spanning from N=58 to the very neutron-rich isotopes beyond the N=82 shell closure. Hyperfine structures and isotope shifts have been measured using the COLLAPS instrumentation at ISOLDE/ CERN. Simple linear and quadratic trends are observed for the electromagnetic moments and differences in charge radii between the lowest 1/2, 3/2, and 11/2 states in 117-131Sn. These regular patterns will be discussed in the framework of nuclear structure.

**Invited Talk** HK 1.2 Mon 11:30 H1

**Highlights from the COMPASS Experiment and the AMBER Proposal** — •Boris Grube — Physik-Department E18, Technische Universität München

The COMPASS experiment, which is the largest multi-purpose fixed-target spectrometer setup at the CERN Super Proton Synchrotron, studies the structure and spectrum of hadrons by scattering high-energy beams of hadrons and polarized muons off various targets. The broad physics program aims at a deeper understanding of the strong interaction, which is described by quantum chromodynamics (QCD). The studied processes include soft reactions of hadrons to test the breaking of the chiral symmetry of QCD, production and decay of meson resonances to perform detailed studies of the excitation spectrum of light-quark mesons, and scattering of high-energy muons and pions off nucleons to unravel the role of spin and internal dynamics in the quark-gluon structure of the nucleon. We will present highlights from recent analyses.

Based on the very successful running of COMPASS, the new AMBER experiment was proposed recently. The physics program includes a wide variety of measurements addressing fundamental questions of QCD. We will discuss the first part of the proposed program, which is intended to start 2022 and aims, among other things, at a measurement of the charge radius of the proton via elastic scattering of high-energy muons off target protons in order to shed more light on the proton-radius puzzle.

**Invited Talk** HK 1.3 Mon 12:00 H1

**Characterizing baryon dominated matter with HADES measurements** — •Szymon Harabasz for the HADES-Collaboration — TU Darmstadt / GSI, Darmstadt, Germany

In heavy-ion reactions at beam energies of a few GeV per nucleon on stationary targets, QCD matter is substantially compressed (2-3 times nuclear saturation density) while temperatures are expected not to exceed T = 70 MeV. Matter under such conditions is being studied with HADES at SIS18.

This contribution discusses new experimental results on the mechanisms of strangeness production, the emissivity of matter and the role of baryonic resonances herein. The multi-differential representations of hadron and dilepton spectra, collective effects and particle correlations will be confronted with results of other experiments as well as with hitherto model calculations.

To provide a deeper understanding of the temperature and density dependence of the intriguing results obtained in the Au+Au and Ar+KCl runs, HADES has completed a run studying Ag+Ag collisions at $\sqrt{s_{\mathrm{NN}}} = 2.55$ GeV, optimized to reach a high enough beam energy for abundant strangeness and vector meson production while yet realizing a large interaction volume. The results obtained for heavy-ion collisions are confronted to studies of elementary reactions serving as a reference for medium effects.