

## Allgemeines Physikalisches Kolloquium/ Abschlusskolloquium des Graduiertenkollegs 2149

Donnerstag, 09.01.2025 - 16 Uhr c.t.



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### Unraveling the mysteries of the most energetic particles in Nature

Cosmic rays with energies greater than  $10^{20}$  eV are regularly observed by the Pierre Auger Observatory over an area of 3000 km<sup>2</sup>. They are known to be of extragalactic origin, but despite the enormous progress made in recent years, Nature has not yet fully revealed their sources. However, a simultaneous description of the observed energy spectrum, mass composition and arrival directions points to powerful nearby starburst galaxies as a key contributor - an observation independently supported by multi-messenger observations of high-energy photons and neutrinos. The enormous particle energies arriving at Earth can also be used to explore fundamental and Beyond Standard Model (BSM) physics, and some examples are presented.

*Following the talk, the Research Training Group 2149 cordially invites you to a reception with refreshments in front of the HS 2.*