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## Compute4PUNCH & Storage4PUNCH: The Platforms for the analysis and Astronomical Data management

*vendredi 27 mars 2026 09:00 (15 minutes)*

Sky surveys in different electromagnetic wavebands and large cosmological simulations often result in significant astronomical data. The first challenge in this process is to have an efficient data management system where this huge amount of data can be stored and made available to the scientific community under the FAIR principle. Storage4PUNCH (S4P) is one of the major components of PUNCH that aims to address this challenge. It offers a platform that provides easy access to scientific data generated by particle-universe-nuclei-hadronic physics experiments, large simulations, and observations. Furthermore, analyzing such big data is required to unfold the secrets of the universe and its formation history, which is another real challenge. Data reduction and analysis tasks require powerful computing resources either to produce true sky brightness maps in a reasonable amount of time, post-process cosmological simulations, or to perform various scientific analyses. This is where the Compute4PUNCH (C4P) infrastructure comes in. The C4P infrastructure consists of high-performance, high-throughput computing machines offered under the PUNCH4NFDI project umbrella and is suitable for such use cases. In the first phase of PUNCH, a S4P access prototype and workflow example were developed to demonstrate C4P's efficiency in analyzing LoFAR and cosmological simulation data. To ensure reproducibility in research, these analysis pipelines and reference data are encapsulated in a workflow and made available as a digital research products. This talk will provide an overview of ongoing work in this area within PUNCH, as well as further advancements for seamless processing.

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**Classification de Session:** Welcome and Logistics