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## Enhancing Data Management in Nuclear Physics and Cross-Domain Metadata Integration

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The metadata schema for experimental nuclear physics project aims to facilitate data management and data publication under the FAIR principles in the experimental Nuclear Physics communities, by developing a cross-domain metadata schema and generator, tailored for diverse datasets, with the possibility of integration with other, similar fields of research (i.e. Astro and Particle physics).

Our project focuses on creating a standardized, adaptable framework that enhances data Findability, Accessibility, Interoperability, and Reusability (FAIR principles). By creating a comprehensive and adaptable metadata schema, the project ensures scalable integration of both machine and human-readable metadata, thereby improving the efficiency of data discovery and utilization.

A pivotal component of the project is its nodal, multi-layered schema structure, allowing metadata enrichment from multiple domains while maintaining essential overlaps for enhanced versatility. This comprehensive approach supports the unification of data standards across various research institutions, promoting interoperability and collaboration on a European scale. Our efforts also extend to the development of a user-friendly frontend generator, designed not only to facilitate metadata input but also to allow users to specify field-specific attributes, customize generic names to suit their needs, and export schemas in various formats such as JSON and XML, adhering to different nomenclatures.

The project involves world-class RIs and ESFRIs, and leverages synergies from existing Open Science initiatives like EOSC, ESCAPE, EURO-LABS, and PUNCH4NFDI. In this contribution, we will present an overview of the project, detailing the development steps, key features of the metadata schema, and the functionality of the frontend generator.

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