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Advancements in Kaonic Atom Measurements: Insights from the SIDDHARTA-2 Experiment at the INFN-LNF DAΦNE Collider

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The SIDDHARTA-2 experiment, conducted at the INFN-LNF DAΦNE collider, is currently engaged in a data collection campaign aimed at achieving the first-ever measurement of the strong-interaction-induced shift and width on the 1s level of kaonic deuterium. Exploiting the superior quality of the low-energy kaon beam provided by the DAΦNE collider in Frascati, Italy, and employing state-of-the-art X-ray detectors such as Silicon Drift Detectors (SDDs), High Purity Germanium (HPGe), and Cadmium-Zinc-Telluride (CdZnTe) devices, the SIDDHARTA-2 Collaboration is performing simultaneousparallel measurements on various kaonic atoms. These efforts are anticipated to have significant implications for the low-energy strangeness sector.
This contribution will outline the physics motivation, describe the experimental apparatus, highlight several noteworthy results obtained so far with different kaonic atoms, provide an update on the current status of the kaonic deuterium measurement, and offer an overview of the forthcoming kaonic atom measurements planned by the collaboration.

session

J. Strange Nuclear Systems

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