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## The Updated SIDDHARTA-2 Apparatus for Kaonic Deuterium X-Ray Spectroscopy

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Kaonic atoms provide an ideal testing ground to precisely study QCD at very low energies. Theoretical models still show significant discrepancies in their descriptions of this regime, and fundamental experimental input to constrain these models is provided by X-ray spectroscopy of light kaonic atoms. This is the goal of the SIDDHARTA-2 experiment located at the DAΦNE collider at LNF, which aims to measure the  $2p \rightarrow 1s$  transition in kaonic deuterium. In comparison to the previously performed kaonic hydrogen measurement, the  $K^-d$  measurement is aggravated by the low X-ray yield and an improvement of the signal-to-background ratio of one order of magnitude is essential. This increase will be implemented in the form of three main updates to the apparatus: the newly developed, large-area X-ray detection system consisting of closely packed Silicon Drift Detectors, a cryogenic, lightweight target cell for optimal X-ray transmission to the detectors, and a two-stage veto system for the active suppression of background. The characteristics and implementation of these updates will be presented.

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