

SUSY 2024

Theory meets Experiment

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Latest results from the NA64 experiment

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NA64 is a fixed target experiment at the CERN SPS searching for dark sectors employing high energy (~ 100 GeV) electron, positron and muon beams. In this talk, we report its latest results on sub-GeV Dark Matter searches with the 2016-2022 statistics (Phys. Rev. Lett. 131 (2023) no.16, 161801). With the new data, NA64 is starting to probe for the first time the very interesting region of parameter space motivated by benchmark light dark matter models. The experiment can also probe a variety of well-motivated New Physics scenarios that will be briefly covered in this talk such as: ALPs (Phys. Rev. Lett. 125 (2020) no.8, 081801), inelastic DM (Eur. Phys. J. C 83 (2023) no.5, 391), $B - L$ (Phys. Rev. Lett. 129 (2022) no.16, 161801) and $L\mu - L\tau$ Z' boson searches (arXiv:2404.06982). Moreover, we will also present the first results of NA64 running in positron (Phys. Rev. D 109 (2024) no.3, L031103) and muon modes (arXiv:2401.01708).

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