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NA64 searching for hidden sectors at the CERN SPS[1]

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NA64 is a fixed target experiment at the CERN SPS to search for hidden sectors. In this talk, we will present our latest results on the search for a new sub-GeV vector gauge boson (A') mediated dark matter (χ) production. The A', called dark photon, could be generated in the reaction $e^-Z \to e^-ZA$ of 100 GeV electrons dumped against an active target which is followed by the prompt invisible decay $A' \to \chi\chi$. The experimental signature of this process would be a clean event with an isolated electron and large missing energy in the detector. This allows us to set new limits on the $\gamma - A'$ mixing strength and constrain models with light thermal dark matter or light scalar, Majorana or pseudo-Dirac thermal dark matter. Preliminary results on the search for the $X \to e^+e^-$ decay of a new light X boson which could explain a recently observed anomaly in the ^{8}Be transitions will be also discussed.

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