

Abstract Submitted
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Search for low mass vector gauge bosons mediating dark forces at KLOE FABIO BOSSI, Laboratori Nazionali di Frascati (INFN), KLOE-2 COLLABORATION — Following recent puzzling astrophysical results, searches for a new low-mass neutral vector boson, weakly coupled with SM particles, are being pursued by several different experiments. The KLOE-2 Collaboration is looking for these particles using both continuum events and Dalitz decays of the ϕ meson produced at the DAΦNE ϕ -factory at the Laboratori Nazionali di Frascati in Italy. No evidence of their existence has been obtained so far and an upper limit in the mass range between 50 MeV and 1000 MeV has been set. Details on different KLOE-2 searches follow: (a.) The U boson can be produced at DAΦNE through radiative decays of neutral mesons, such as $\phi \rightarrow \eta U$, with $U \rightarrow \ell^+ \ell^-$. The η was tagged by three-pion final states, which provide clean signal events. (b.) In the $e^+e^- \rightarrow U\gamma$ process the expected U boson cross section can be as high as O(pb) at DAΦNE energies. The on-shell boson can decay into a lepton pair, giving rise to a $\ell^+ \ell^- \gamma$ signal. (c.) We searched for the existence of a higgsstrahlung process in a secluded sector, possibly leading to a U boson and a dark Higgs boson final state. We investigated the case where the dark Higgs is lighter than the U boson and escapes detection, showing up as missing energy.

Anthony Palladino
Boston Univ

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