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A search for massless dark photons in positronium decays

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The existence of dark matter has been established by different cosmological observations, however its origin is still unknown. Many candidates have been proposed among which the most popular ones are probably Weakly Interacting Massive Particles (WIMPs). Despite intensive searches in accelerators and in direct detection experiments, WIMPs have not yet been observed. An interesting alternative, are hidden sectors. This class of models includes the possibility of a new force mediated by a massive vector gauge U(1) boson, called dark photon.
Interestingly, if the new U(1) gauge symmetry is unbroken, the massless dark photon can be searched for in positronium decays. Here we present the latest results of such an experiment.

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