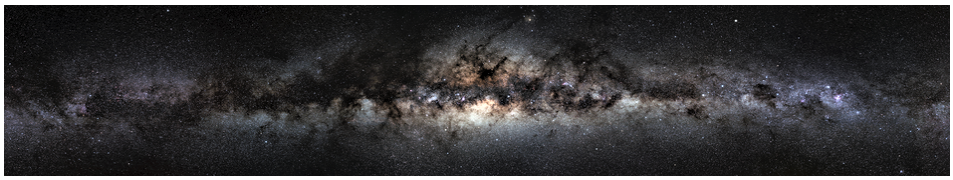

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A Last Chance for Kinetic Mixing: Explaining $(g-2)_\mu$ with Semi-visible Dark Photons

Tuesday, 7 December 2021 08:20 (30 minutes)

The recent $(g-2)_\mu$ measurement by the E989 experiment at Fermilab has recently confirmed the previous results at the Brookhaven experiment. The current tension between experiment and the Standard Model (SM) predictions stands at $4.2\,\sigma$. In light of this tantalizing result, it is tempting to reconsider the few low-energy extensions of the SM that may explain the discrepancy. In particular, we revisit the contribution of a kinetically mixed dark photon to the $(g-2)_\mu$, which has been excluded in minimal models with fully visible and invisible dark photon decays. By explicitly re-evaluating constraints from B-factories and fixed target experiments, we show that dark photons with semi-visible decays can still explain the $(g-2)_\mu$ puzzle. Such solution would point to dark sectors with co-annihilating dark matter candidates or dark neutral leptons with fast decays

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