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Search for a new gauge boson in π0 decays with WASA-at-COSY

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Decays of the π0 allows to search mediates gauge bosons of dark forces in the MeV range. The decay π 0 ⟶ e+ e−γ is sensitive to a "dark photon" that decays into an e+ e− pair. WASA-at-COSY has collected a 500k data sample to constrains the parameters of this hypothetical gauge boson. The rare decay π 0 ⟶ e+ e− might also probe physics beyond the standard model. The 3σ deviation between experiment and SM prediction might be explained by a dark gauge boson, which might also account for the enhanced e+ e− annihilation line from the galactic center. A high statistics run with WASA-at-COSY could confirm the present experimental result.

Primary author: Mr GULLSTROEM, Carl-Oscar (Uppsala University)

Presenter: Mr GULLSTROEM, Carl-Oscar (Uppsala University)

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