



Contribution ID: 1041

Type: Poster Presentation

Explanation of the 17 MeV Atomki Anomaly in a $U(1)'$ -Extended 2-Higgs Doublet Model

Motivated by an anomaly observed in the decay of an excited state of Beryllium by the Atomki collaboration, we study an extension of the Standard Model with a gauged $U(1)'$ symmetry in presence of a 2-Higgs Doublet Model structure of the Higgs sector. We show that this scenario complies with a variety of experimental results and is able to explain the potential presence of a resonant spin-1 gauge boson, Z' , with a mass of 17 MeV in the Atomki experimental data, for appropriate choices of $U(1)'$ charges and Yukawa interactions.

Experimental Collaboration

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Session Classification: Poster session

Track Classification: Higgs and New Physics