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Explaining the ATOMKI X17 particle within the Standard Model

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— In 2016, Krasznahorkay *et al.* at the Institute for Nuclear Research, Hungarian Academy of Sciences (ATOMKI), announced data indicating the existence of a hypothetical gauge boson. In 2019 Krasznahorkay *et al.* announced additional evidence indicating the existence of the 'hypothetic X17 particle' in the form of e^+e^- pairs from the M0 transition depopulating the 21.01 MeV 0^- state in ^4He , with 7.2σ significance. We critically analyze the original results of ATOMKI as well as new evidence in the context of Standard Model processes, in particular interference effects between non-resonant decay amplitudes and higher-order QED corrections.

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