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Is New Physics Needed to Explain the ATOMKI Anomaly?

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Do we really need a hypothetical gauge boson, "X17", to explain the famous ATOMKI measurements? Or can there be some interplay between the theoretical and experimental effects? We show that the bump in the ${}^8Be(18.15) \rightarrow {}^8 Be + e^+ + e^-$ decay data can be reproduced within the Standard Model by adding the full set of second-order corrections and the interference terms to the Born-level decay amplitudes, and demonstrate how experimental selection and acceptance bias exacerbate the apparent difference between the experimental data and the Born-level prediction.

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