

Abstract Submitted
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Upgrade of the β - ν correlation experiment with beta decay of optically trapped $^{38\text{m}}\text{K}$ atoms¹ ALEXANDRE GORELOV, JOHN BEHR, PETER JACKSON, MATT PEARSON, TRIUMF, DANNY ASHERY, Tel Aviv University, DAN MELCONIAN, Texas A&M University — TRIUMF's β - ν correlation measurements from beta decay of optically trapped $^{38\text{m}}\text{K}$ atoms resulted in the world best limit on the presence of general scalar interaction in superallowed $0^+ \rightarrow 0^+$ Fermi decays (PRL **94**,142501,2005). Observing trapped atoms by $\Delta E - E$ scintillator based beta-telescope and MCP based recoil detector in back-to-back geometry, we were able to deduce β - ν correlations. Analysis of the systematics has shown that the main limitations come from characterisation of the beta-detector, applied electric field and knowledge of energy dependent probability of the recoil ionization. A new improved setup utilizing larger experimental chamber and detectors and stronger, better characterized applied electric field should allow us to significantly reduce systematic errors and reach 0.1% resulting error.

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