

Limit on the effective magnetic moment of solar neutrinos from Borexino Phase-II data

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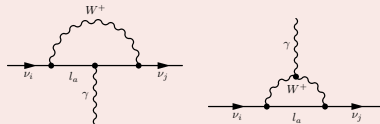
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Magnetic moment of solar neutrinos

EM neutrino interaction

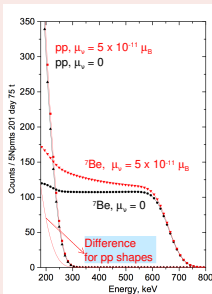
- occurs at one-loop level (for massive neutrinos only)
- changes neutrino helicity (and possibly flavor)



- μ_ν can contribute to the $\nu - e$ elastic scattering

$$\frac{d\sigma_{\text{EM}}}{dT_e} \propto \mu_{\text{eff}}^2 \left(\frac{1}{T_e} - \frac{1}{E_\nu} \right)$$

effective magnetic moment is μ_ν for a flavor mixture



Borexino experiment

- large mass (278 tons liquid scintillator)
- low threshold (~ 200 keV on recoil electrons)
- energy resolution ($\sim 5\%$ @ 1 MeV)

