Search for the *G*-Parity Violation of Weak Nucleon Current in β decays of Mass 8 System

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The *G* parity of the weak nucleon current relates to the symmetry between β decays of a proton and a neutron. Strong interactions induce additional terms conserving the *G* parity into the weak nucleon current. However, the *G*-parity irregular induced tensor term g_{II} may be caused by a small asymmetry between a proton and a neutron or more fundamentally between up and down quarks.

The experiment was performed by using the Van de Graaff accelerator at Osaka University. The nuclear-spin polarized ^{8}Li or ^{8}B was obtained by restricting the recoil angle of reaction products. In order to obtain the pure spin alignment, the spin orientation of the polarized nuclei was manipulated by using the β-NMR technique. We observed the alignment correlation terms in the β-ray angular distribution from the purely aligned ^{8}Li and ^{8}B to extract g_{II}. Figure 1 shows the g_{II} extracted in the present mass *A*=8 system and the *A*=12 and 20 systems [1].
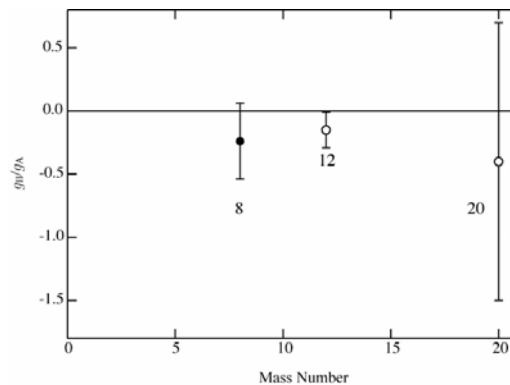
FIGURE 1. *G*-parity violating induced tensor term g_{II} in the present mass 8 system and the others [1].

[1] K. Minamisono *et al.*, Phys. Rev. C **65** (2002) 015501; R.D. Rosa *et al.*, Phys. Rev. C **37**, 2722 (1988)