

## **Polarized electron target as tool for testing time reversal symmetry violation and neutrino nature in leptonic weak interactions at low energies**

### **Authorship annotation**

### **Session and Location**

Wednesday Session, Poster Wall #117 (Auditorium Gallery Left)

### **Abstract content**

Possibility of using the elastic scattering of low energy electron neutrinos (Dirac or Majorana) on the polarized electron target for a study of the time reversal symmetry violation (TRSV) and neutrino nature is considered. It turns out that the azimuthal asymmetry (AA) and the spectrum of scattered electrons contain the interference terms between standard  $V - A$  and exotic  $V + A$  and  $S_R, P_R, T_R$  couplings proportional to the various angular correlations which survive in the relativistic neutrino limit. All the interferences depend on the transversal  $\nu$  polarization (TNP) related to the source. However, the quantities independent of TNP and coming from the interference between the scalar and tensor interactions in the cross section for the Dirac  $\nu$  occur and lead to the departure from the standard AA. Detection of such anomaly would indicate the Dirac  $\nu$  and allow to test the TRSV. This study is based on the published paper in the Eur. Phys. J. C (2018) 78:197.

### **Poster included in proceedings:**

yes

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**Session Classification :** Poster Session Wednesday

**Track Classification :** Poster (not participating in poster prize competition)