Low Energy Tests of Fundamental Symmetries: Achievements and Prospects *

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The standard model of electroweak interactions contains a number of *ad-hoc* assumptions and poses a number of questions which are expected to find explanations in extended theoretical frameworks. There is a general consensus that, whatever the shape of the extended theory might be, new phenomena should manifest themselves either at the high energy frontier, which is accessible by exploring new energy domains, or at the precision frontier, which can be probed at any energy where precision measurements are possible.

It is well known that the nucleus is an attractive laboratory to perform precision experiments provided the involved decays are properly selected. The study of correlation observables in nuclear β-decay offer indeed simple means to perform sharp tests of the symmetry properties assumed by the standard model of electroweak interactions. More specifically, measurements of pseudoscalar observables, like the β-asymmetry parameter or the β-longitudinal polarization, and correlations involving an odd number of polar and axial vectors, constitute sensitive probes to search for deviations from maximal parity violation and from time reversal invariance in weak decays.

This paper will review such precision experiments which have made a significant progress over the past few years. In particular measurements combining the on-line production of an intense source of polarized nuclei with high efficiency polarimeters for the analysis of specific components of the β-polarization, have tested discrete space-time symmetries with unprecedent precision [1,2].

The prospects of measurements under preparation at several laboratories will be addressed with emphasis on the precision aims required by new experiments to improve present limits on non standard weak couplings.

[1] M. Allet *et al.*, *Phys.Lett.* **B383** (1996) 139; E. Thomas *et al.* (to be published).
[2] J. Sromicki *et al.*, *Phys.Rev.* **C53** (1996) 932.

*Some of the achievements described in this paper have been obtained at the Philips cyclotron of the Paul Scherrer Institute, Villigen, by a collaboration between ETH-Zurich/ UCL-Louvain-la-Neuve and U.-Wisconsin (Madison) the members of which might be found in the references.