Precision measurements at JYFLTRAP for fundamental physics

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A combination of IGISOL-separator and Penning trap measurements is well suited for the precision determination of Q-values of superallowed beta decays and double beta decays. With the IGISOL-technique parent and daughter nuclei of the decay can be extracted during the same without target-ion source chemistry related restrictions, while tandem trap configuration inside the one superconducting solenoid allows fast transport back and forth between two traps and thus new means of ion manipulations.

In this presentation measurement program for fundamental physics at JYFLTRAP will be reviewed with examples of related techniques developed at JYFL. Q-value measurements include superallowed beta decays, double beta decay studies, IMME tests and rare beta decays. In addition to Q-value measurement the JYFLTRAP can be coupled to spectroscopic stations, which are used to provide other information required by fundamental physics. Examples of precision half-life and branching ratio measurements of superallowed beta decay will be given.

The previous generation of IGISOL-facility, IGISOL 3 was shut down during the Summer 2010 and since then whole IGISOL facility has been moved to the new building and re-commissioned. Outlook for trap program with IGISOL 4 will be briefly described.