"FROM REX-ISOLDE TO HIE-ISOLDE:

STATUS AND FUTURE PERSPECTIVES"

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Since 2001, energetic radioactive ion beams are used at ISOLDE-CERN for Coulomb excitation and reaction studies using the Miniball germanium detector array and ancillary silicon detector systems. The so-called REX-ISOLDE project that was based on an innovative approach to post-accelerate essentially all existing radioactive beams at ISOLDE to 3 MeV/u allowed studies with nuclei as light as ^{8}Li and as heavy as ^{224}Ra [1,2]. Based on this achievement, the High Energy and Intensity ISOLDE (HIE ISOLDE) project was launched to increase the beam energy to 5 MeV/u and beyond. Last year the first experiment was carried to study multiple Coulomb excitation of ^{74,76}Zn. This marks an area of new opportunities at ISOLDE for research on exotic nuclei and will provide key information to unravel poorly known aspects of the strong and weak interaction acting in atomic nuclei.

On the one hand side, the increased radioactive ion beam (RIB) intensity and purity and the broadening of ISOLDE's RIB portfolio will allow investigating new areas of the nuclear chart, lowering detection and feasibility thresholds and increasing precision. On the other hand the higher beam energy - up to 10 MeV/u - will allow multiple Coulomb excitation measurements, few nucleon transfer reactions and other reaction studies. As a result new experimental techniques and probes can be exploited including coupling the "Test Storage Ring – TSR" to ISOLDE to store and study circulating RIB.

In this contribution, a short review of the REX-ISOLDE era will be given and a selection of new experimental opportunities offered by the HIE ISOLDE project and their potential impact will be discussed.

REFERENCES

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