systems. PPC detectors have high efficiency for light charged particles (LPC) detection thus can strongly reduce the LPC background.

Figure 1: Ionization part (left side) and the scintillation part (right side) of the SID detector.

The SID chamber was recently used in the complete fusion SHE experiment (E533) at GANIL. At the Warsaw cyclotron facility (HIL) we plan to make further tests of the SID detector by using low-energy Ar beam.

References:

[1] Z. Sosin *et al.*, Acta Phys. Pol. **B40** (2009) 741

5. Coulomb excitation of light Hg nuclei

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In light, even mass Hg isotopes, a weakly deformed oblate ground state band is found to coexist with a more deformed prolate band. To investigate the origin and evolution of shape coexistence in the N = 102-108 mid shell region Coulomb excitation measurements of ^{182,184,186,188}Hg were performed at REX-ISOLDE using the MINIBALL detector array. Beams of ^{182,184,186,188}Hg isotopes were provided by ISOLDE and post accelerated by REX, for the first time, to an energy of 2.85 MeV/u and delivered to the target position of MINIBALL.

Using the Coulomb excitation analysis code GOSIA matrix elements can be obtained for the observed low-lying states in the measured nuclei which will enable the magnitude and sign

of the diagonal matrix element to be determined, giving an accurate measure of deformation and mixing. The evolution of band mixing and deformation will enhance our understanding of shape coexistence in this part of the nuclear landscape.

The Warsaw group played a vital role in the analysis of this data. This involved helping produce and debug the GOSIA input files and explaning the proceses of each stage of the analysis. The technique of 'cross-normalisation' – normalising to the target excitation in the Coulomb excitation reaction – enabled us to be independent of the B(E2) values obtained from lifetime measurements for the Hg nuclei in our analysis. Results are being obtained and matrix elements derived.

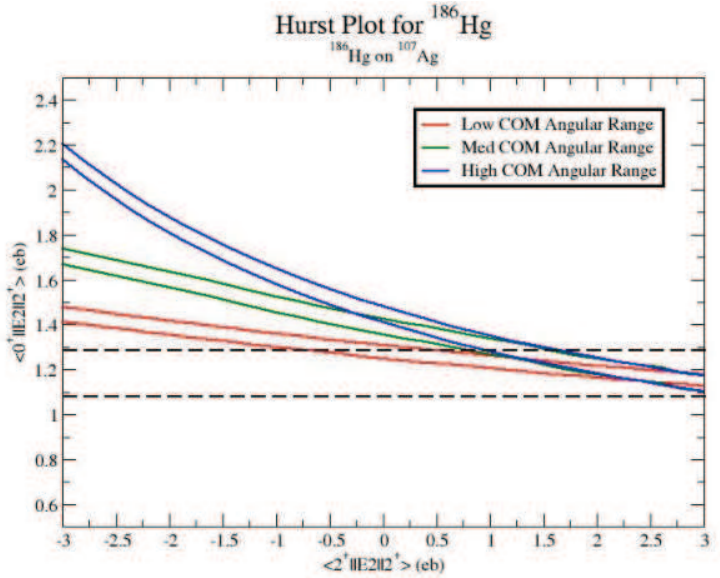

Figure 1: The graphical process used to derive the diagonal matrix element for the first 2^+ state in ^{186}Hg using GOSIA. A positive value indicating oblate structure is found.

6. The Eurisol database

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The EURISOL database containing experimental and calculated cross-sections [1], and estimate of ISOL efficiencies, based on ISOLDE SC yield database [2], was upgraded by several theoretical calculations.

The prediction of production cross-sections was added for reactions in which experimental cross-section data do not exist, extending database prediction range.

Much effort was devoted to reproduce existing experimental data with results of simulation codes. An example of comparison between experimental data and computer code calculations (ABRABLA code) is shown in Fig. 1, for ^{238}U + Pb reaction at 1 GeV/nucleon.