



Level Scheme Tool Survey

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Reference Schemes in LISE++

- Currently there are connections to other sources for level scheme drawings of isomers.
 - GANIL and NNDC have level scheme graphics based on their reserved databases.
- Objective: Create a level scheme tool that draws from filtered data obtained from the Isomer database within LISE++ with the Isomer API.
- Referencing ^{31}Mg , new tools are compared to the existing level schemes seen below in figures 1, 2 and 3:

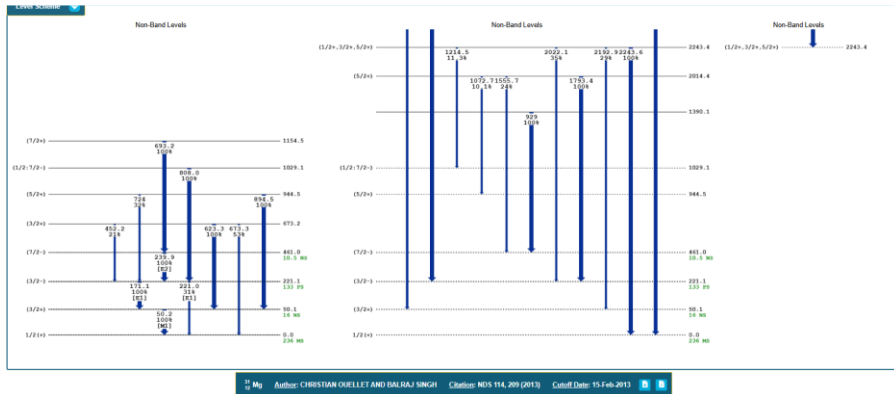


Fig. 1: A,Z Scheme (beta) NNDC

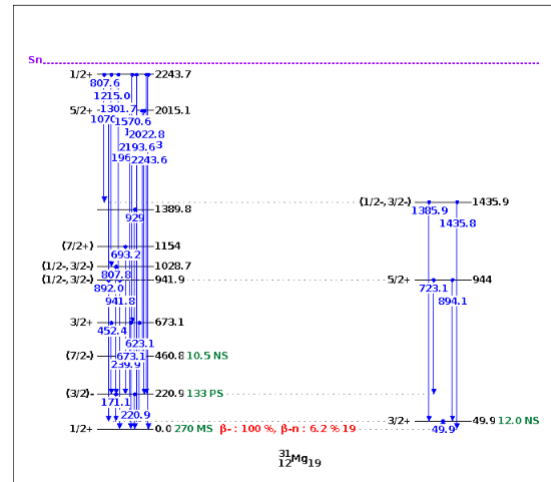


Fig. 2: A,Z Scheme NNDC

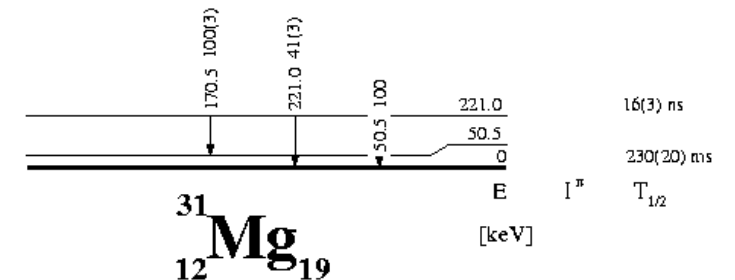


Fig. 3: Isomer GANIL

DrawLevels Package

- Parameters defined by integers and strings, no customized JSON files or problematic formatting.
 - Can read from CSVs or .sqlite information – accessible with fast python scripts.
 - Compatible with Isomer_DB.sqlite file in LISE⁺⁺.
- Moving forward:
 - Include $T_{1/2}$ and spin values represented in drawing.
 - Stagger energy value labels for close-energy levels.
 - » See flags in schemes like Figure 3.
- PACKAGE LICENSE: MIT License
 - Available for: Commercial use, modification, distribution, private use.
 - No warranty or liability held by package.

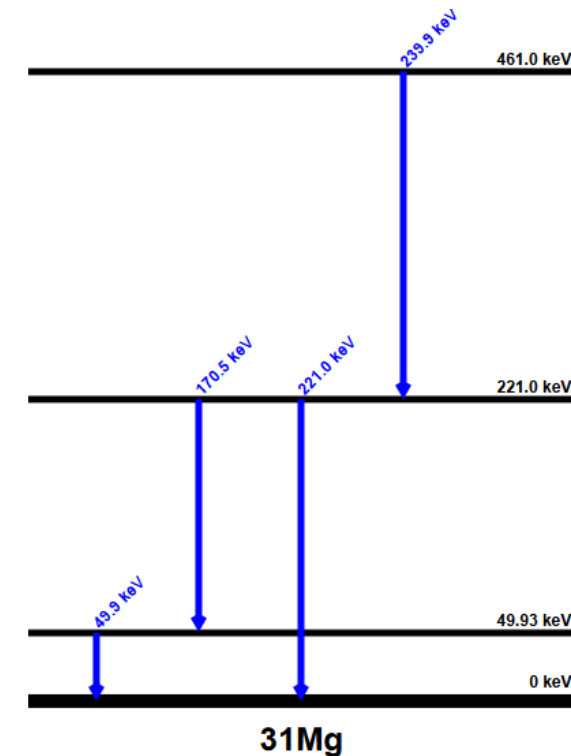


Fig. 4: Drawn level scheme from Isomer Database on ^{31}Mg

Implementing in Isomer API Widget

- Successfully combined the DrawLevels package with the existing Isomer API.
 - Use selection query imposed on QSqlTableModel to create a Pandas Data Frame from the Isomer_DB.sqlite database then run drawing script on relevant data.
 - Functional for single-isotopes currently.
 - » Requires filtering by A and Z numbers of isotope, all additional filters optional.

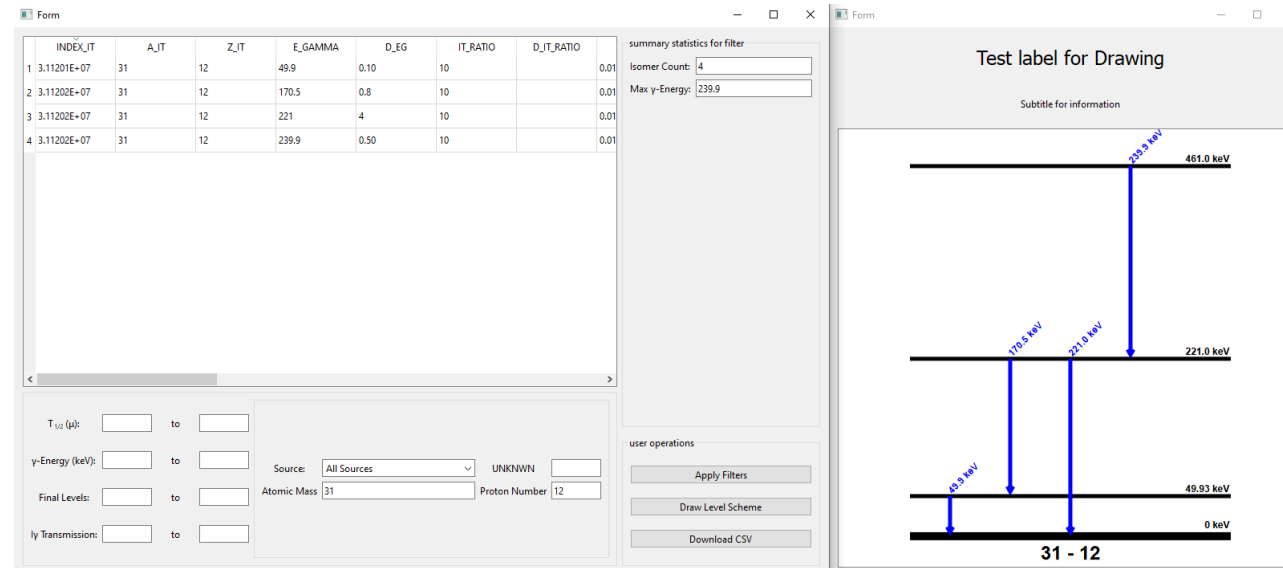


Figure 5: Current result from filtering and drawing for ^{31}Mg