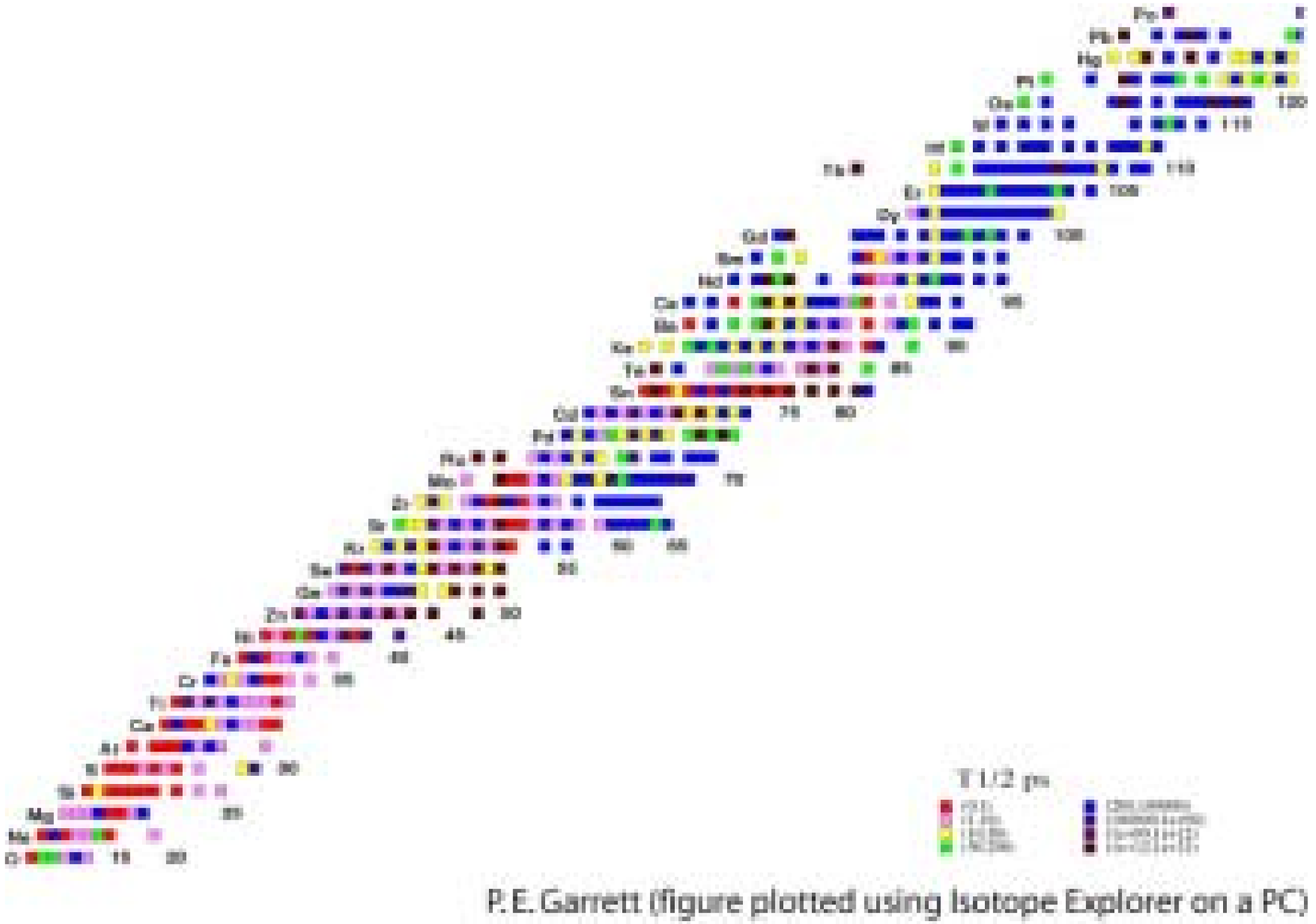
GTNDSE:

the GA Tech nuclear data search engine

W. D. Kulp, J. L. Wood
Georgia Institute of Technology

- **Function**
- Retrieve data from ENSDF-formatted files
- Write data in user-selected format

- **Purpose**
- Horizontal systematics of nuclear mass surface
- Comparison with experimental data
- Assist in data analysis and evaluation

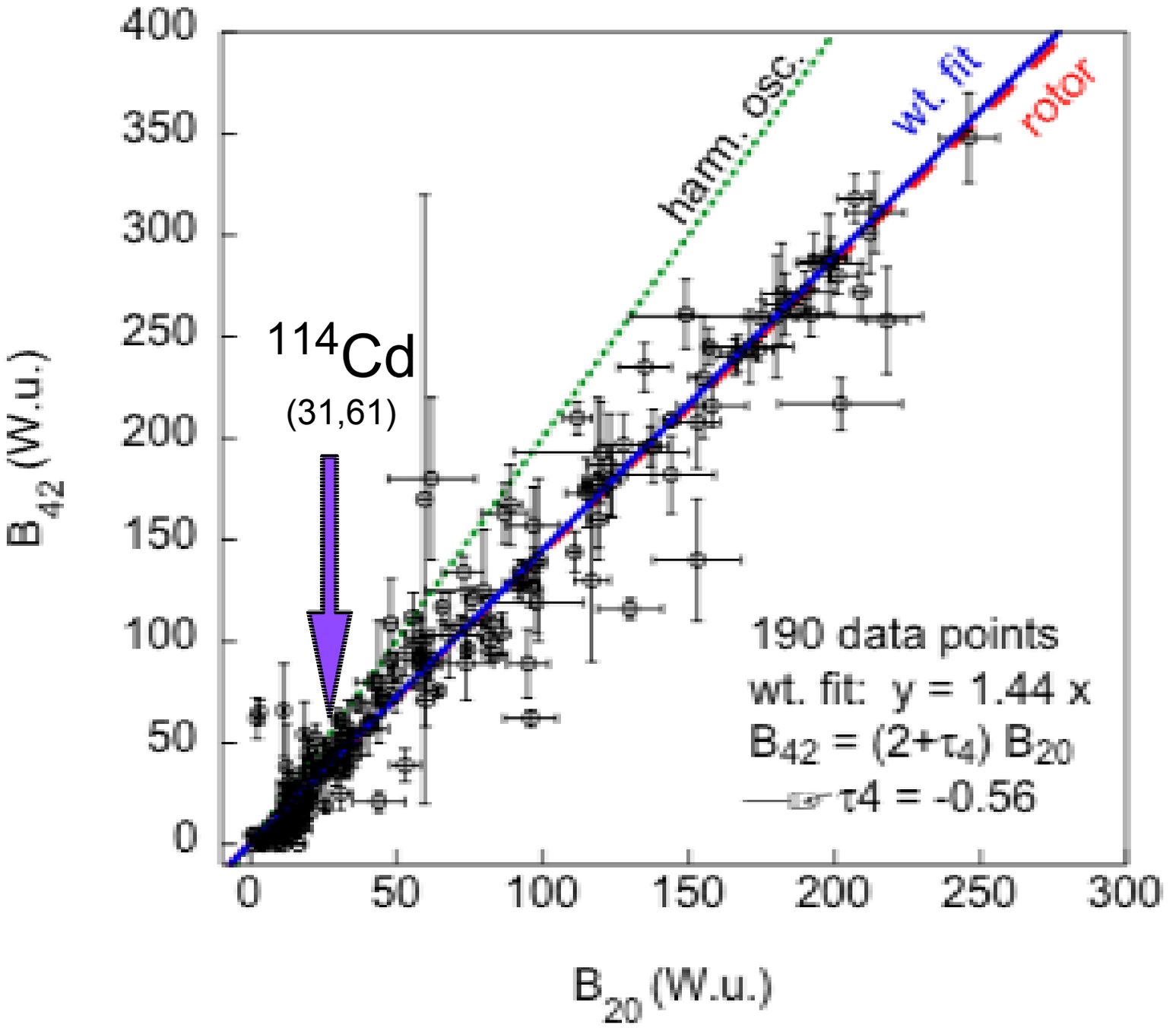


Request: known lifetimes of first-excited states

Result: 585 values (including 4 lacking uncertainty, 3 approximate values, 6 lower limits, and 29 upper limits)

B(E2) systematics

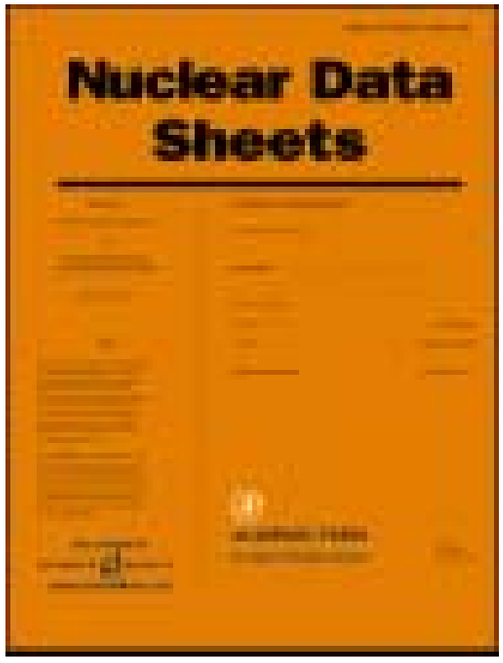
- ENSDF search < 1 minute
- Required evaluation (e.g., ^{114}Cd: $t_{1/2}$ w/o B_{42})

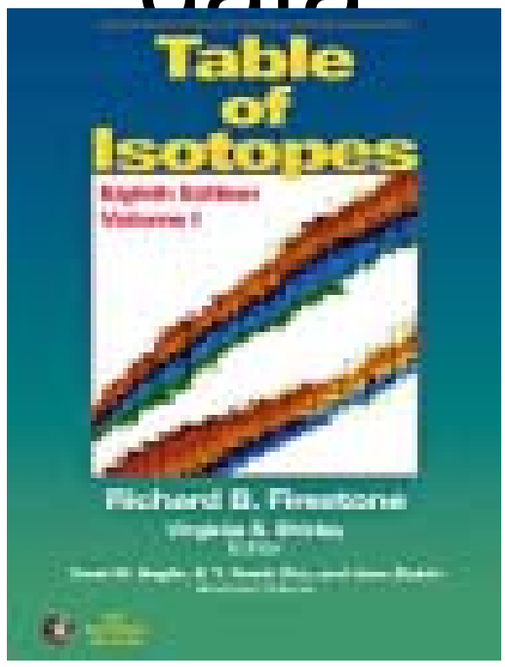


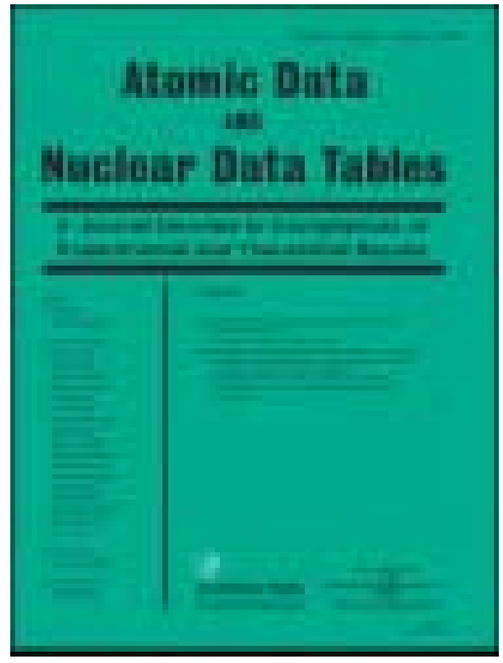
- **Other searches**
- Impurities in a cocktail beam (P. Walker, Surrey)
- Known B(M1) values (F. Sarzin, TRIUMF)
- K-isomer search: lifetimes, B(EL), and B(ML)

- **Directions**
- Flexible input/output interface
- Rigorous testing and evaluation
- Web-based CGI

Available sources of nuclear data





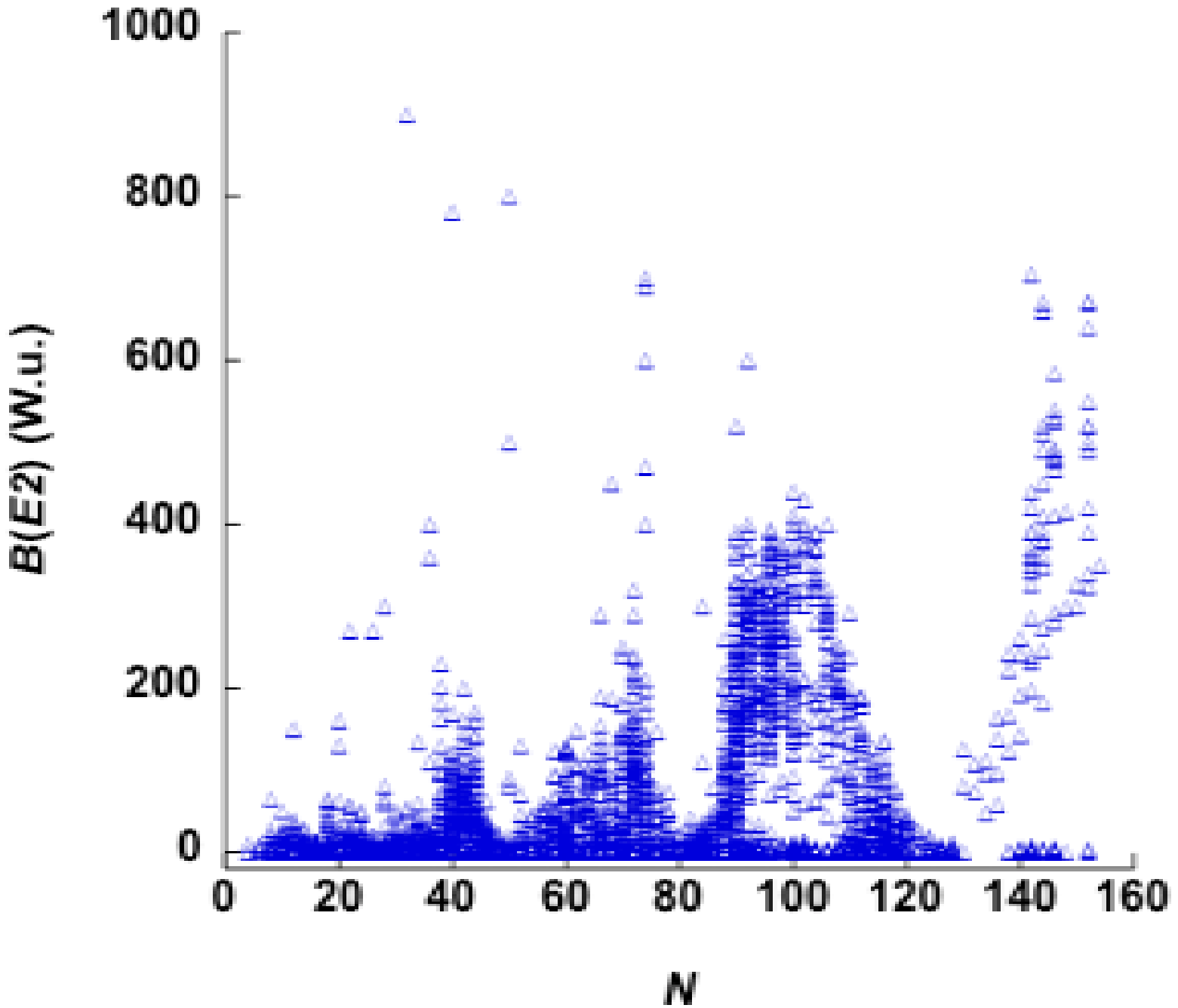


- Printed sources are cumbersome and contain very few horizontal evaluations (e.g., S. Raman, C. W. Nestor, Jr., and P. Tikkanen, At. Data Nucl. Data Tables **78**, 1 (2001).)

- Electronic sources often require particular computer operating systems and may have limited use in retrieving horizontal data: use the raw evaluated database.

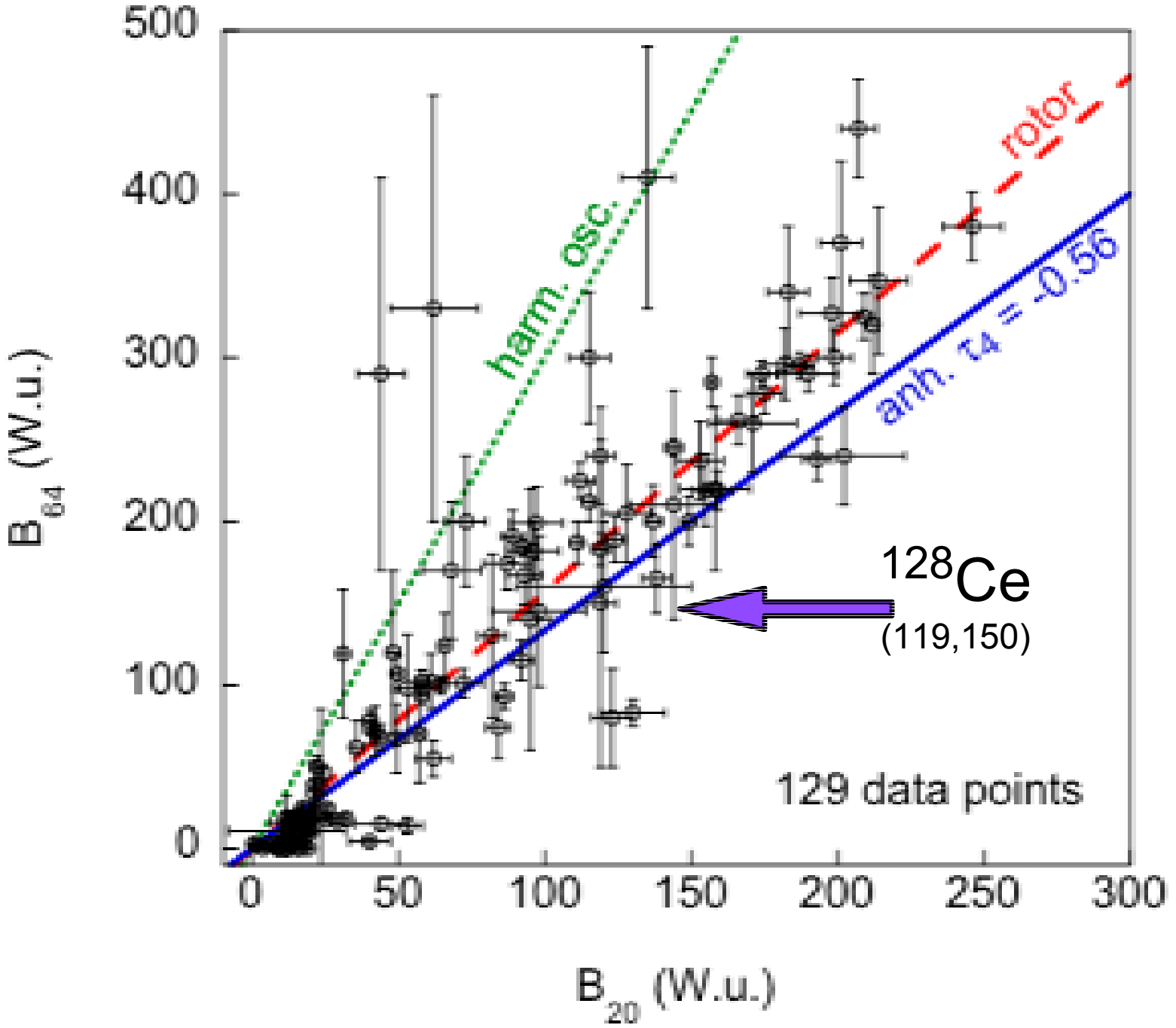
B(E2) search

- ENSDF search: 37 seconds
- >3000 B(E2) values returned



B(E2) systematics

- Search ignores limits, approximations
- Additional evaluation (e.g., ^{128}Ce $B_{20}>10^5$)



B(E2) systematics

- 80 nuclei found with B_{20} through B_{86}
- Total of 207 nuclei with B_{42}/B_{20} values