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Investigation of the B(E2; 0_1+ ⟶ 2_1+) value of 116Sn

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The tin isotopes, being proton-magic with a long chain of experimentally accessible nuclei, are an important testing ground for nuclear structure models.
Present data show systematic deviations between measured electric quadrupole (E2) ground-state excitation strengths depending on the used techniques.
Also, various nuclear structure models come to different predictions on the systematics of E2 strengths, particulary around ^{116}Sn. Latest Monte Carlo shell model calculations [1] predict a dip of E2 strengths around $N = 66$, which is explained by a second-order quantum phase transition from deformed shapes to the pairing phase.
Therefore, a measurement of ^{116}Sn relative to ^{112}Sn was performed for the first time using the nuclear resonance fluorescence method at S-DALINAC at TU Darmstadt.
Bremsstrahlung up to 2.2 MeV was used to populate the first excited 2^+ states of ^{112}Sn and ^{116}Sn and the photons of the subsequent de-excitation were measured by three high-purity germanium detectors.
With our relative measurement we aim to provide a test for the predicted dip of E2 strengths around ^{116}Sn, and obtain the absolute B(E2) value from a previous measurement of ^{112}Sn.

[1] T. Togashi et al., Phys. Rev. Lett. 121, 062501 (2018)

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