Contribution ID: **18** Type: **not specified**

M1 Transition strenght of the mixed-symmetry 2+ state of 132Te

Tuesday 12 July 2022 10:25 (15 minutes)

The one-phonon mixed-symmetry 2^+ of ^{132}Te is of high interest due to the specific structure of this nucleus, with two valence-proton particles and two valence-neutron holes with respect to the doubly-magic nucleus ^{132}Sn. In recent experiments, the second excited 2^+ state has been assigned as the one-phonon mixed-symmetry 2^+ state [1], due to the high B(M1) transition strength between this state and the 2^+_1 state, which is the proton-neutron symmetric counterpart of the mixed-symmetry state. However, the obtained value is highly uncertain and extraordinarily large with 5.4(3.5) μ_N^2, mainly due to the $50\,\%$ uncertainty in the reference value of its decay branching ratio to the 2^+_1 and 0^+_1 state [2].

By populating the 2^+_2 state in a two-neutron transfer reaction ^{130}Te(^{18}O,^{16}O)^{132}Te at IFIN-HH in Romania, it was now possible to obtain a more precise value for the B(M1) transition strength. This was achieved by determining the lifetime after performing a lineshape analysis of the deexcitation γ-rays using the Doppler-shift attenuation method.

[1] M. Danchev *et al.*, Phys. Rev. C **84** (2011) 061306(R)

[2] R. O. Hughes *et al.*, Phys. Rev. C **71** (2005) 044311

Authors: STETZ, Tim (Technische Universität Darmstadt, Dept. of Physics, Institute for Nuclear Physics); BECK, T (Technische Universität Darmstadt, Dept. of Physics, Institute for Nuclear Physics); KOSEOGLOU, P (Technische Universität Darmstadt, Dept. of Physics, Institute for Nuclear Physics); PIETRALLA, N (Technische Universität Darmstadt, Dept. of Physics, Institute for Nuclear Physics); WERNER, V (Technische Universität Darmstadt, Dept. of Physics, Institute for Nuclear Physics); ZIDAROVA, R (Technische Universität Darmstadt, Dept. of Physics, Institute for Nuclear Physics); BORCEA, R (IFIN-HH, Romania); CALINESCU, S (IFIN-HH, Romania); COSTACHE, C (IFIN-HH, Romania); DINESCU, I (IFIN-HH, Romania); IONESCU, A (IFIN-HH, Romania); MIHAI, R (IFIN-HH, Romania); NITA, C (IFIN-HH, Romania); STAN, L (IFIN-HH, Romania); TOMA, S (IFIN-HH, Romania); RAINOVSKI, G (Sofia University St. Kliment Ohridski)

Presenter: STETZ, Tim (Technische Universität Darmstadt, Dept. of Physics, Institute for Nuclear Physics)

Session Classification: Empirical aspects of quantum phase transitions in nuclei

Track Classification: Empirical aspects of quantum phase transitions in nuclei