
Contribution ID: **283** Type: **Poster Presentation**

# Coulomb Excitation of 66Ge

The Coulomb excitation of $^{66}$Ge has been performed for the first time using "safe" bombarding energies at the HIE-ISOLDE facility at CERN in July 2017. A particle-$\gamma$ coincidence experiment using the MINIBALL array and double-sided silicon detectors has allowed the determination of transitional and diagonal matrix elements in $^{66}$Ge, yielding new measurements of the reduced transition probability connecting the ground state, $0_1^+$, and the first excited state, $2_1^+$, or $B(E2; 2_1^+ \rightarrow 0_1^+)$ value, and the spectroscopic quadrupole moment of the $2_1^+$ state, $Q_S(2_1^+)$. A relatively large $B(E2) = 29.4(30)$˜W.u. has been extracted using beam-gated data at forward angles – less sensitive to second-order effects – as compared with the adopted value of $16.9(7)$ W.u., but in closer agreement with modern large-scale shell-model calculations using a variety of effective interactions and beyond-mean field calculations. A spectroscopic quadrupole moment of $Q_S(2_1^+) = +0.41(12)$ eb has been determined using the reorientation effect from the target-gated data at projectile backward angles – more sensitive to the reorientation effect. Such an oblate shape is in agreement with the corresponding collective wave-function calculated using beyond mean-field calculations and its magnitude agrees with the rotational model, assuming $B(E2) = 29.4(30)$ W.u. This work solves a long-standing puzzle regarding the loss of quadrupole collectivity in $^{66}$Ge and provides a deeper insight into how oblate nuclei rotate.

## Apply to be considered for a student ; award (Yes / No)?

yes

## Level for award;(Hons, MSc, PhD, N/A)?

N/A

**Primary authors:** ABRAHAMS, Kenzo (University of the Western Cape); ORCE, Nico (University of the Western Cape)

**Presenter:** ABRAHAMS, Kenzo (University of the Western Cape)

**Session Classification:** Poster Session

**Track Classification:** Track B - Nuclear, Particle and Radiation Physics