

Contribution ID: 3143 Type: Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)

## (G\*) Investigating the Nuclear Shell Evolution in Neutron-Rich Calcium

Monday 6 June 2022 11:15 (15 minutes)

Nuclei away from the line of stability have been found to demonstrate behavior that is inconsistent with the traditional magic numbers of the spherical shell model. This has led to the concept of the evolution of nuclear shell structure in exotic nuclei, and the neutron-rich Ca isotopes are a key testing ground of these theories; there have been conflicting results from various experiments as to the true nature of a sub-shell closure for neutron-rich nuclei around  $^{52}$ Ca. In November of 2019, an experiment was performed at the ISAC facility of TRIUMF;  $^{52}$ K,  $^{53}$ K, and  $^{54}$ K were delivered to the GRIFFIN gamma-ray spectrometer paired with the SCEPTAR and the ZDS ancillary detectors for beta-tagging, as well as DESCANT for neutron-tagging. Using this powerful combination of detectors, we combine the results to construct level schemes for the isotopes populated in the beta-decay. Preliminary results from the analysis will be presented and discussed in the context of an N=32 shell closure in neutron-rich nuclei.

## Author: COLEMAN, Robin

**Co-authors:** TALEBITAHER, A (University of Regina); LAFFOLEY, Alex (University of Guelph (CA)); RADICH, Allison (University of Guelph); MACLEAN, Andrew (University of Guelph); OLAIZOLA, Bruno (CERN); Mr NATZKE, C.R. (Colorado School of Mines); SVENSSON, Carl (University of Guelph); PORZIO, Carlotta (Università degli Studi di Milano, TRIUMF); PAXMAN, Charlotte Eleanor (University of Surrey (GB)); GRIFFIN, Christopher (TRIUMF); ANDREOIU, Corina (Simon Fraser University); YATES, Daniel Aaron (TRIUMF (CA)); GARCIA, Fatima H. (Simon Fraser University); WU, Frank (Tongan) (Simon Fraser University); SARAZIN, Fred (Colorado School of Mines); BALL, Gordon (TRIUMF); Ms CARPENTER, Grace (TRIUMF); GRINYER, Gwen (University of Regina); BIDAMAN, Harris (University of Guelph); WHITMORE, Kenneth (Simon Fraser University); Ms HAN-LEY, M (Colorado School of Mines); ROCCHINI, Marco (Universita e INFN, Firenze (IT)); MARTIN, Matthew; GAR-RETT, Paul Edward (University of Guelph (CA)); LUBNA, R.S. (TRIUMF); Mr SHADRICK, S. (Colorado School of Mines); SHARMA, S. (University of Regina); Ms BUCK, Samantha (University of Guelph); BHATTACHARJEE, Soumendu Sekhar (TRIUMF); ZIDAR, Tammy (University of Guelph); UNKNOWN, UNKNOWN; VEDIA, Victoria (TRIUMF); BILDSTEIN, Vinzenz (University of Guelph (CA)))

## Presenter: COLEMAN, Robin

**Session Classification:** M1-4 Nuclear Structure and Astrophysics (DNP) | Structure nucléaire et astrophysique (DPN)

**Track Classification:** Technical Sessions / Sessions techniques: Nuclear Physics / Physique nucléaire (DNP-DPN)