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$^{69,71}\text{Co}$ β decay with total absorption spectroscopy

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The rapid neutron-capture process, or r-process, is known to produce roughly half of the isotopes of heavy elements. Sensitivity studies have shown that the final abundance distributions of r-process nuclei are greatly impacted by nuclear masses, neutron-capture rates, and β -decay properties. For this reason, β -decay intensities for $^{69,71}\text{Co}$ were measured using the technique of total absorption spectroscopy at the NSCL. This technique allows us to overcome the so-called “pandemonium effect,” which can cause β -feeding intensities to high-lying excitation energies to be missed in traditional β -decay experiments. The high Q-value of these isotopes allow for the study of β -decay properties over a broad energy range. The resultant β -decay intensities and deduced Gamow-Teller strengths will be compared to QRPA calculations, which are commonly used in r-process calculations.

Primary author: Dr LYONS, Stephanie (National Superconducting Cyclotron Laboratory)

Co-authors: COUTURE, Aaron (Los Alamos National Laboratory); Prof. BROWN, Alex (National Superconducting Cyclotron Laboratory); Mr DOMBOS, Alex (NSCL / MSU); Dr LARSEN, Ann-Cecilie (University of Oslo); SPYROU, Artemis (NSCL/MSU); Dr CRIDER, Benjamin (Mississippi State University); Dr PROKOP, Christopher (LANL); Dr BLEUEL, Darren (Lawrence Livermore National Laboratory); NAQVI, Farheen (National Superconducting Cyclotron Laboratory); PERDIKAKIS, Georgios (Central Michigan University); CRESPO CAMPO, Lucia (University of Oslo); Prof. GUTTORMSEN, Magne (University of Oslo); Dr MUMPOWER, Matthew (Los Alamos National Lab); Dr MOLLER, Peter (Los Alamos National Laboratory); LEWIS, Rebecca (NSCL/MSU); SURMAN, Rebecca (University of Notre Dame); Prof. LIDDICK, Sean (NSCL / MSU); Dr MOSBY, Shea (Los Alamos National Laboratory); Dr QUINN, Stephen (National Superconducting Cyclotron Laboratory); Prof. SIEM, Sunniva (University of Oslo); Dr RENSTOM, Therese (University of Oslo)

Presenter: Dr LYONS, Stephanie (National Superconducting Cyclotron Laboratory)

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