

PROPOSAL FOR EXPERIMENT AT RCNP

9 February 2017

TITLE:

Spectroscopy of ^{18}C : single-neutron transfer $^{17}\text{C}(\text{d},\text{p})$ with the Active Target Time Projection Chamber (AT-TPC)

SPOKESPERSON:

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EXPERIMENTAL GROUP:

Full Name	Institution	Title or Position
Wolfgang Mittig	NSCL - Michigan State University	Hannah Professor
Daniel Bazin	NSCL - Michigan State University	Senior Researcher
Saul Beceiro-Novo	NSCL - Michigan State University	Professor
Joshua Bradt	NSCL - Michigan State University	Graduate Student
Lisa Carpenter	NSCL - Michigan State University	Graduate Student
Marco Cortesi	NSCL - Michigan State University	Researcher
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Atsushi Tamii	Research Center for Nuclear Physics, Osaka University	Associate Professor
Isao Tanihata	Research Center for Nuclear Physics, Osaka University	Professor
Tomoyuki Baba	Department of Physics, Hokkaido University	D1
Masaaki Kimura	Department of Physics, Hokkaido University	Associate Professor
Tatsuya Furuno	Kyoto University	D3
Takahiro Kawabata	Kyoto University	Associate Professor
Shunpei Koyama	The University of Tokyo	D1
Daisuke Suzuki	RIKEN Nishina Center	Researcher
Beatriz Fernandez-Dominguez	USC, Universidade de Santiago de Compostela	Associate Professor
Manuel Caamano Fresco	USC, Universidade de Santiago de Compostela	Researcher
Hector Alvarez-Pol	USC, Universidade de Santiago de Compostela	Associate Professor
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Natasha Timofeyuk	University of Surrey	Senior Researcher
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Mohamad Moukaddam	University of Surrey	Researcher
Geoffrey-Fathom Grinyer	GANIL	Researcher
Thomas Roger	GANIL	Researcher
Julien Pancin	GANIL	Engineer
Marina Petri	University of York	Researcher
Stefanos Paschalis	University of York	Researcher

RUNNING TIME:	Test running time for experiment	2 days
	Data runs	10 days
BUDGET:	Experimental expenses	3 Myen

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SPOKESPERSON: B. Fernández-Domínguez, D. Suzuki and Y. Ayyad

SUMMARY OF THE PROPOSAL

We propose to study the spectroscopy of ^{18}C through single-neutron transfer using the AC-TPC active target. The $^{17}\text{C}(\text{d},\text{p})$ reaction will populate the single-particle states in ^{18}C . The aim of the experiment is to measure the strength of the sd-orbitals in the low-lying states in ^{18}C that will bring crucial information on three-body forces, the influence of the coupling to the continuum, as well as the three-body structure in ^{18}C . These results would be important to establish the evolution of the shell structure along the neutron-rich Carbon isotopes and to refine the residual interaction within shell model calculations.