

E421

PROPOSAL FOR EXPERIMENT AT RCNP

July 17, 2014

TITLE: Pygmy Dipole Resonance in Zr isotopes

SPOKESPERSONS:

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EXPERIMENTAL GROUP:

Name	Institution	Title or Position
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T. Hashimoto	Institute of Basic Science, Korea	Researcher
N. Pietralla	Institut für Kernphysik, Technische Universität Darmstadt	Professor
V. Werner	Institut für Kernphysik, Technische Universität Darmstadt	Senior Researcher
S. Aslanidou	Institut für Kernphysik, Technische Universität Darmstadt	PhD student
A. Krugmann	Institut für Kernphysik, Technische Universität Darmstadt	PhD student
S. Bassauer	Institut für Kernphysik, Technische Universität Darmstadt	MSC student
M. Singer	Institut für Kernphysik, Technische Universität Darmstadt	MSC student
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N. Aoi	RCNP, Osaka University	Professor
Y. Fujita	RCNP, Osaka University	Associate Professor
E. Ideguchi	RCNP, Osaka University	Associate Professor
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H.J. Ong	RCNP, Osaka University	Assistant Professor
T. Suzuki	RCNP, Osaka University	Assistant Professor

H. Fujita	RCNP, Osaka University	Researcher
T. Ito	RCNP, Osaka University	D3
M. Miura	RCNP, Osaka University	M2
H. Sakaguchi	RCNP, Osaka University	Guest Scientist
Y. Shimbara	CYRIC, Tohoku University	Researcher
H. Akimune	Department of Physics, Konan University	Professor
Y. Matsuda	Department of Physics, Konan University	Postdoctoral fellow
C. Kadono	Department of Physics, Konan University	M2
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T. Kawabata	Department of Physics, Kyoto University	Associate Professor
S. Adachi	Department of Physics, Kyoto University	D3
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J. Zenihiro	RIKEN Nishina Center	Researcher
H. Matsubara	NIRS	Postdoctoral fellow

THEORETICAL SUPPORT:

Name	Institution	Title or Position
T. Inakura	Chiba University	Researcher
H. Nakada	Chiba University	Professor
V.Yu. Ponomarev	Institut für Kernphysik, Technische Universität Darmstadt	Senior Researcher
H. Sagawa	Aizu University	Professor
S. Ebata	Hokkaido University	Postdoctoral fellow

RUNNING TIME: Beam tuning time 2 days
Data runs 7 days

BEAM LINE: Ring: WS course

BEAM REQUIREMENTS: Type of particle proton
Beam energy 300 MeV
Other requirements for (p,p')
unpolarized, high-resolution halo-free beam, 3nA
energy resolution ≤ 20 keV with dispersion matching

BUDGET: 2,100,000 yen

TITLE

Pygmy Dipole Resonance in Zr isotopes

SPOKESPERSONS: Chihiro Iwamoto and Atsushi Tamii

SUMMARY OF THE PROPOSAL

We propose an experiment to measure the strength distribution of the low-lying $E1$ strength in Zr isotopes to study the neutron number dependence of the pygmy dipole resonance. We plan to measure angular distributions of inelastic scattering protons at most forward angles including 0 degree with Grand Raiden spectrometer. The $E1$ strength distributions will be extracted by applying the multipole decomposition analysis of angular distributions of differential cross sections.

The proposed measurement on neutron number dependence of the PDR strength in medium heavy mass region is important to study the origin and the evolution of the pygmy dipole resonance and the relevance to the occupation of neutron single particle orbits with low angular momentum.

This is an updated proposal of E421.