



国立研究開発法人理化学研究所 仁科加速器科学研究センター
第285回 RIBF核物理セミナー
RIKEN Nishina Center for Accelerator Based Science
The 285th RIBF Nuclear Physics Seminar

Location of the Neutron Dripline at Fluorine and Neon

Dr. DeukSoon Ahn
(RIKEN Nishina Center)

A search for the heaviest new isotopes of fluorine, neon and sodium was conducted by fragmentation of an intense 48Ca beam at 345 MeV/nucleon and identification of isotopes in the large-acceptance separator BigRIPS at RIBF. No events were observed for $32,33\text{F}$, $35,36\text{Ne}$ and 38Na and only one event for 39Na after extensive running. Comparison with predicted yields excludes the existence of these unobserved isotopes with high confidence levels, which indicates that 31F and 34Ne are the heaviest isotopes of fluorine and neon, respectively. Thus the neutron dripline has been confirmed up to neon for the first time since 24O was confirmed to be the dripline nucleus nearly 20 years ago. These results provide new keys to understanding the nuclear stability at extremely neutron-rich conditions. In this seminar, the determination of neutron driplines for fluorine and neon will be presented along with comparisons with nuclear mass and structure models. The results of a follow-up experiment, which was conducted to confirm the 39Na event, will be also introduced.

References

D. S. Ahn, N. Fukuda, H. Geissel, N. Inabe, N. Iwasa, T. Kubo, K. Kusaka, D. J. Morrissey, D. Murai, T. Nakamura, M. Ohtake, H. Otsu, H. Sato, B. M. Sherrill, Y. Shimizu, H. Suzuki, H. Takeda, O. B. Tarasov, H. Ueno, Y. Yanagisawa, and K. Yoshida, Phys. Rev. Lett. in press.

Jan.14th(Tue.)2019 13:30~
RIBF Hall, RIBF bldg., RIKEN

* The talk will be given in English language.

Contact: Nuclear Physics Seminar Organizing Committee
npsoc@ribf.riken.jp
<http://ribf.riken.jp/~seminar/>