筑波大学
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KEK 高エネルギー加速器研究機構

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所属： ドイツ、GSI

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場所： 筑波大学応用加速器部門3階大会議室

講演題目

Precision Experiments with Rare Isotope Beams

概要

An introduction into the modern physics with rare (short-lived, exotic) nuclear beams will be presented. Short-lived, bare and few-electron ions of all elements can now for the first time been investigated in the laboratory. Besides the basic interest in understanding of nuclear matter in our environment, highly charged radioactive ions exist in hot stellar plasmas the sites where the nucleosynthesis happens. Exotic nuclei have been produced and investigated in a large energy region, from the Coulomb barrier up to 90 % light velocity. Basic questions on the existence of atoms with unusual proton-to-neutron are motivations for this scientific effort. At relativistic velocities the exotic nuclei are bare and thus provide unique possibilities to measure their fundamental ground state properties in a storage ring. We observed that the absence of atomic electrons can change the nuclear decay properties quite significantly and can even open new decay channels like the recently discovered beta decay into bound states. Precision experiments normally require a small phase space occupation and a long ob-servation time, conditions which are extremely difficult to achieve with rare isotopes. Special cooling techniques in storage rings and ion-optical measures solve these problems. New results from such precision experiments with stored exotic nuclei at relativistic energies at the FRS-ESR will also be presented in this contribution.

* 講演は英語で行われます。

* 車で来場の場合は、応用加速器部門ホームページにて地図、駐車場、注意事項などをご確認下さい。
(http://www.tac.tsukuba.ac.jp/)

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