乞掲示

理化学研究所原子核グループコロキウム　*2002. 7. 25*

講師 ： **Dr. Takashi Ohtsubo**

(Department of Physics, Niigata University)

題目 ： Direct observation of bound state beta decay of bare ^{207}Tl at FRS-ESR in GSI.

∗ The seminar will be given in *Japanese.*

日時 ： 2002年 7月 25日 (Thu.)　15:00 –

場所 ： RIKEN Main Bldg. 3F Seminar Room

Abstract

Bound state beta decay is a special form of beta decay, where the electron becomes bound in an inner atomic shell (predominantly the 1s-shell) of the daughter atom. This process is very important when atoms get highly ionized, as e.g. in astellar plasma. The beta lifetimes may alter by many orders of magnitude with respect to those of the corresponding neutral atoms, as has been proven by several experiments performed at the ESR in GSI over the last years.
An experiment was carried out at the FRS-ESR facilities, where the bound state beta decay of ^{207}Tl was directly observed for the first time. The ^{207}Tl atoms were produced by fragmentation of a ^{208}Pb primary beam in a Be target at the FRS and separated using the Brho-ΔE-Brho method. In the ESR, the ions were stored, electron-cooled, and detected via time-resolved Schottky spectroscopy. From observed Schottky mass spectra, together with the measured beta decay to the continuum, a wealth of unique information will results: total and partial bound state beta decay lifetimes, the bound state beta decay Q-value and, moreover, the ratio of bound- and continuum electron wave function, which yields the 'Fermi function'.

∗ Host researcher : A. Ozawa (RIKEN)

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セミナー係

重イオン核物理研究室　福田 直樹　柳澤 善行

セミナー係連絡先

(email)　seminar@rarfaxp.riken.go.jp

(FAX)　048–462–4464

(WWW)　http://rarfaxp.riken.go.jp/~seminar/