Contribution ID: **46** Type: **working group on synergies in instrumentation**

Prototyping of DSSD detectors for the EXL project

Monday, 7 June 2010 18:10 (10 minutes)

The EXL1) experiment as part of the future FAIR facility will provide the means for studying numerous physics phenomena in unstable exotic nuclei. Reactions will be performed in inverse kinematics using new storage-ring techniques and an universal detector system providing high resolution and large solid angle coverage for kinematically complete measurements. The present work focuses on prototyping and testing double-sided silicon strip detectors (DSSDs) produced in PTI St. Petersburg (Russia) as a part of the EXL's Silicon Particle Array (ESPA).
The spectroscopic properties and tracking performance of DSSDs with 16x16 and 64x64(16) strips were studied using 241Am alpha source, with special emphasis on the interstrip characteristics using particle implantation from either the junction or the ohmic side.
These detectors were also used in telescope-like configurations in two test experiments with proton beams of 50 and 100 MeV performed at KVI Groningen and GSI Darmstadt, respectively, aimed at the total energy reconstruction. Another experiment with these detectors was performed at TU München aimed at separating protons and alpha particles using pulse shape discrimination. Special ceramic PCBs along with support flanges were constructed and tested at GSI Darmstadt to examine the possibility of using the first layer of EXL's DSSDs as an active vacuum barrier separating storage ring ultra-high vacuum from moderate vacuum housing all the subsequent detectors and the necessary cabling and electronics.
The talk will cover spectroscopic performance of DSSDs as well as the results of the aforementioned experiments. The second part will address the mechanical solutions for the ESPA in conjunction with the vacuum prototype using DSSDs as a vacuum barrier.

1) http://www.rug.nl/kvi/Research/hnp/Research/EXL/index

Is this an invited talk? (please answer yes or no)

no

Would you prefer your contribution to be a poster presentation? (please answer yes or no)

no

Would you prefer your contribution to be an oral presentation? (please answer yes or no)

yes

Are you a student, postdoc or an attendee from an "emerging"country and would like to apply for financial support?

yes

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Session Classification: Working Group - Synergies in Instrumentation

Track Classification: Working group meetings on synergies in instrumentation