BR9023136
INIS-BR--2021

P3-51

STRUCTURE OF THE SUPER NEUTRONISED DOUBLY SHELL CLOSED NUCLEUS $^{132}_{50}Sn_{82}$

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Mass data on extremely neutron rich nuclei are important for the theories of nucleo-synthesis and for predictions about super heavy elements[1]. Off all the doubly magic nuclei ^{132}Sn is of special interest because of its large N/Z ratio. The indication of ^{132}Sn playing the role of good closed core for nuclear structure came from the works of Kerek et al.[2]. Aleklett et al.[3] have studied ^{132}Sn to understand the shape of the mass surface in the region far away from β-stability line. From the theoretical point of view lack of stripping and pick up data makes if difficult for structure calculation. So far only one calculation has been reported about the single particle levels around ^{132}Sn [4]. In our search for the bunching effect of single particle levels around. A~130-140 region we have made use of a global set of potential of Woods - Saxon type which has been successfully utilised in deriving rms radii of valence nucleons in different regions of nuclear chart[5].

In order to examine the shell model states of ^{132}Sn, we have followed the method of Ref.[5]. The limitation set by the experiments have led us to compare the calculated energy eigen values for few states as shown in the table 1 and 2. The agreement obtained gives support to our conjecture that a good set of potential parameters and the interpolation formula given earlier can reproduce islands of magicity throughout the periodic table.

Table 1. Single particle proton states of ^{132}Sn

Proton state	Binding energy Th.	Binding energy Expt.
$1f_{5/2}$	19.00	18.97
$1g_{9/2}$	14.80	15.38
$1g_{7/2}$	8.99	9.68
$2d_{5/2}$	8.66	8.72

Table 2. Neutron states of ^{132}Sn

$1g_{7/2}$	9.45	9.72
$2d_{5/2}$	9.53	8.95
$3s_{1/2}$	7.88	7.62
$2d_{3/2}$	2.59	2.63

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