

One- and two-neutron removal reactions from ^{23}O

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A very recent letter by Kanungo *et al.* [1] reports new measurements of inclusive one- and two-neutron removal reactions from ^{23}O at a beam energy of 72 MeV/nucleon. The cross sections and longitudinal momentum (p_{\parallel}) distributions of the ^{22}O and ^{21}O residues were also analysed in a model which couples a nucleon to inert core states. However, the calculated cross-section magnitudes were not considered. A conclusion was that the data showed clear evidence of a structure change in the ^{22}O core in ^{23}O .

In this contribution these new data are investigated by combining both (eikonal) reaction theory [2, 3] and (shell model) structure [4, 5] calculations and information, and which take account of the many-body nature of ^{23}O . The direct two-neutron removal cross section contributions are also estimated using the eikonal approximation. Using this approach we will show that a near-quantitative understanding of the RIKEN measurements can be reached by quite elementary arguments. For these neutron-rich oxygen isotopes, we will show also that this theoretical approach is in good agreement with the measurements and moreover with the normal expectations of $p - sd$ shell structure.

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References

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