

High Spin States in ^{37}Ar

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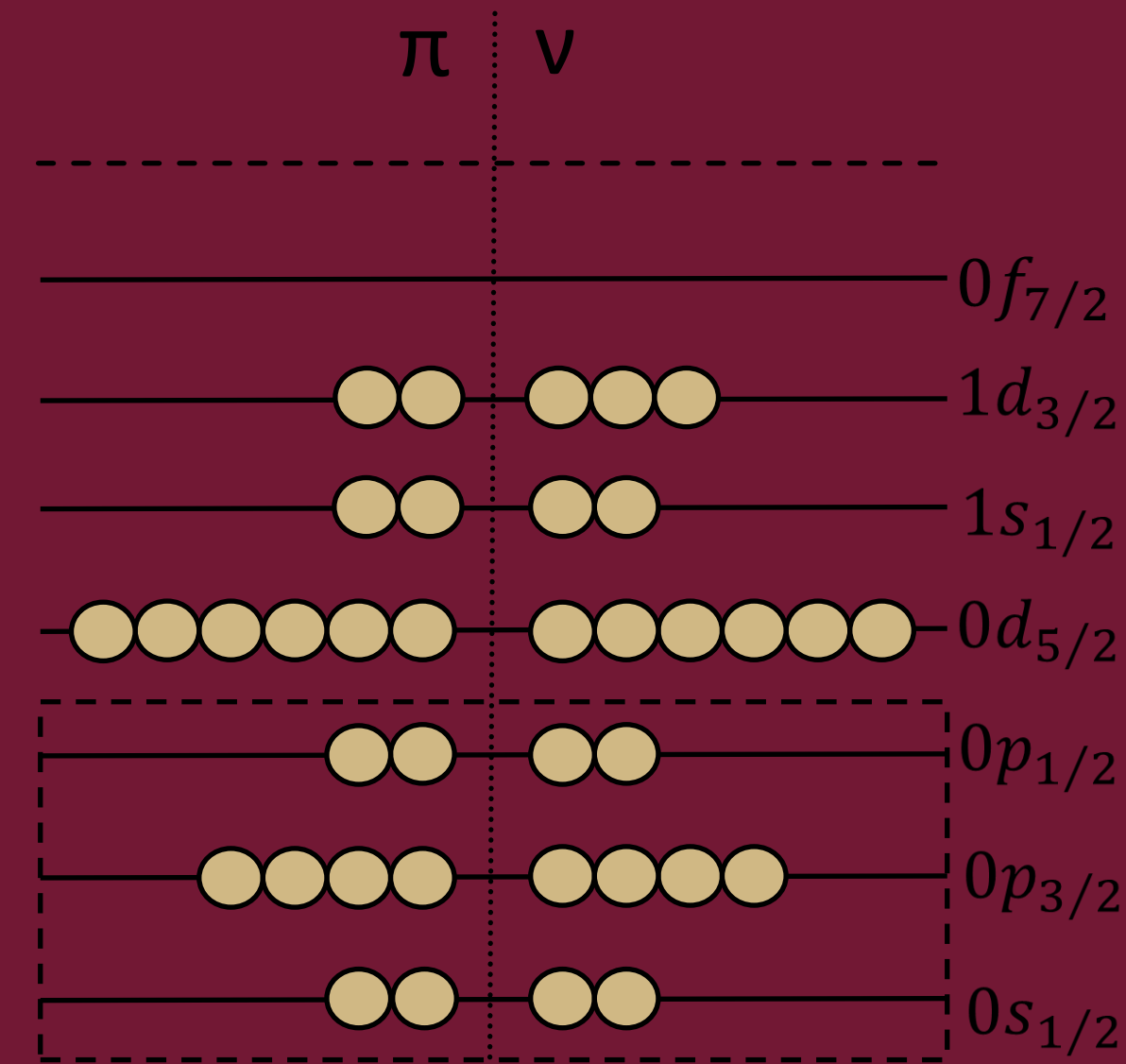
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The FSU Interaction and Argon 37

The FSU interaction is a modified USDB shell model with fitted parameters for cross sd-fp shell excitations. This was done using zero particle zero hole (0p0h) and one particle one hole (1p1h) excitations in literature. The FSU interaction has shown surprising predictive power for two particle two hole (2p2h) excitations, as shown in ^{37}Ar .

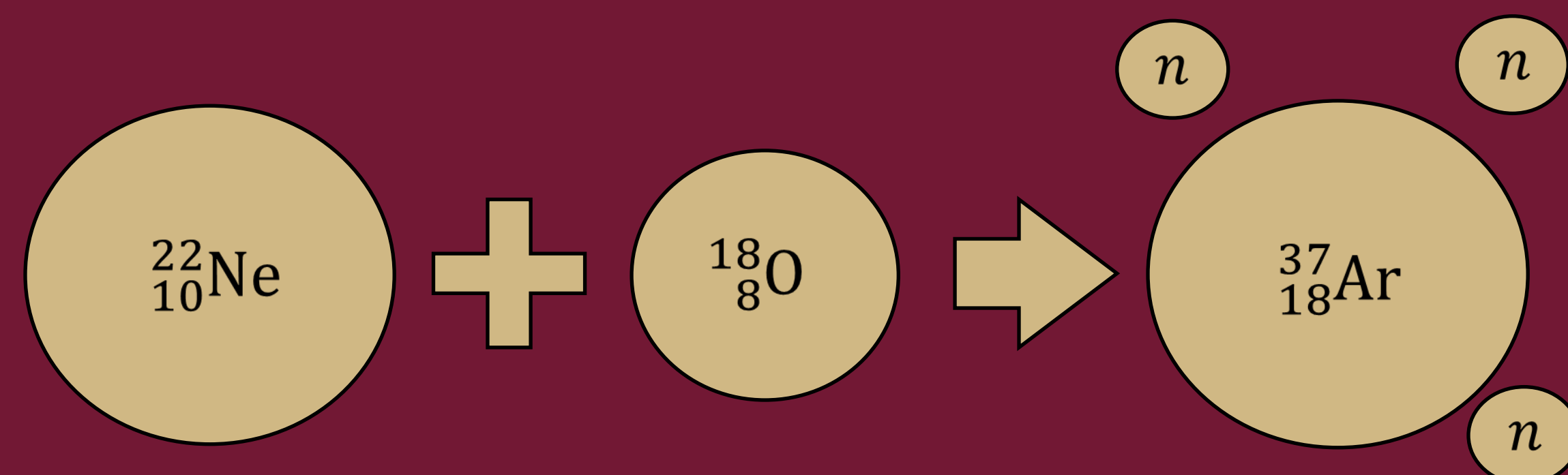
Shell Model

The FSU interaction is a shell model with an ^{16}O core. In ^{37}Ar the $d_{3/2}$ level is partially filled. This makes the preferred excitation a shell jump to $f_{7/2}$.

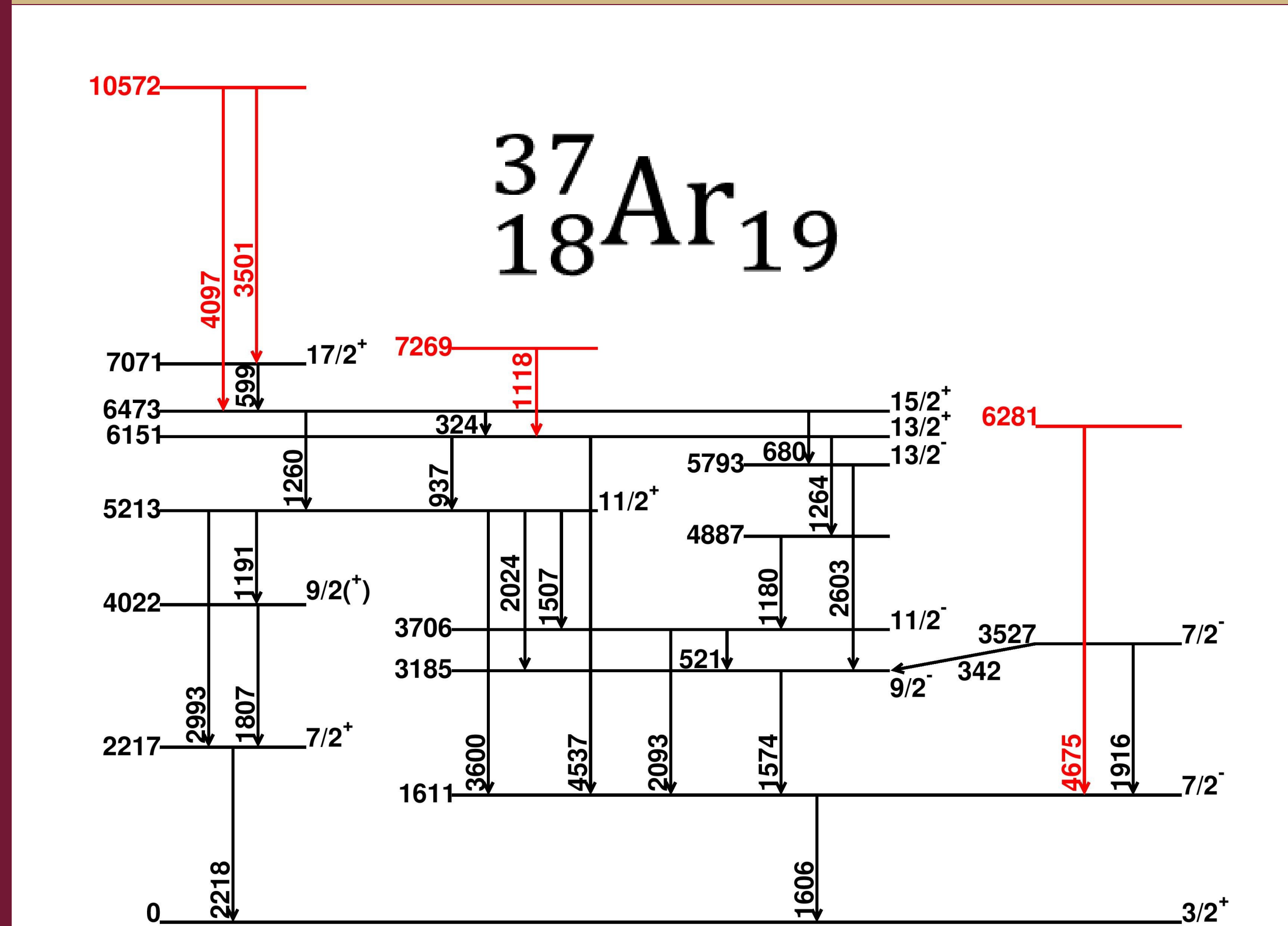


Experimental Setup

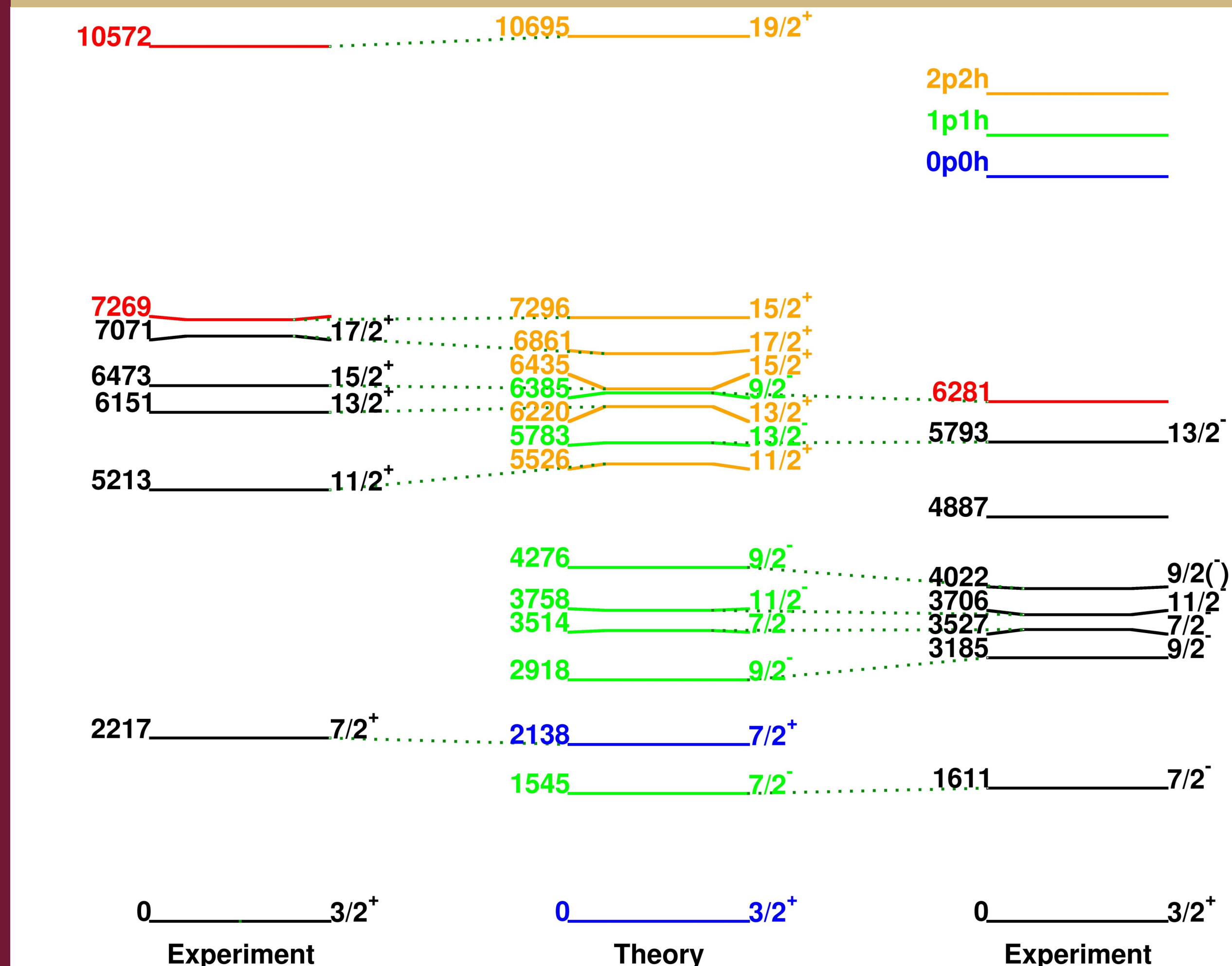
The data was taken at Argonne National Lab with the GREINA HPGe array. The ATLAS accelerator was used, accelerating ^{22}Ne to 45 MeV, and a ^{18}O target was placed inside GREINA. After fusion evaporation the compound nucleus emits three neutrons to make ^{37}Ar . A Fragment Mass Analyzer (FMA) was also part of this experiment but not used in this analysis.



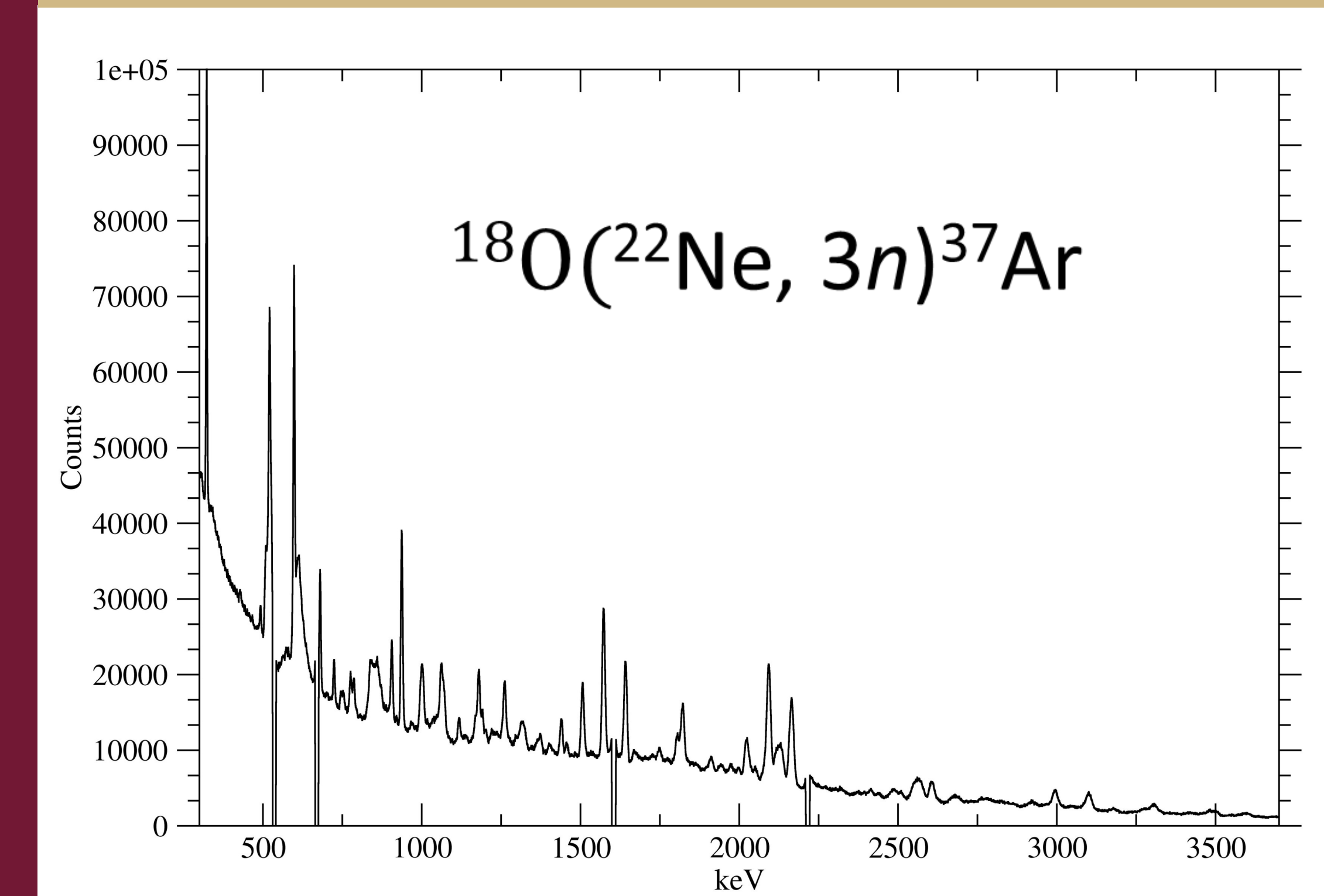
Ar 37 Level Scheme



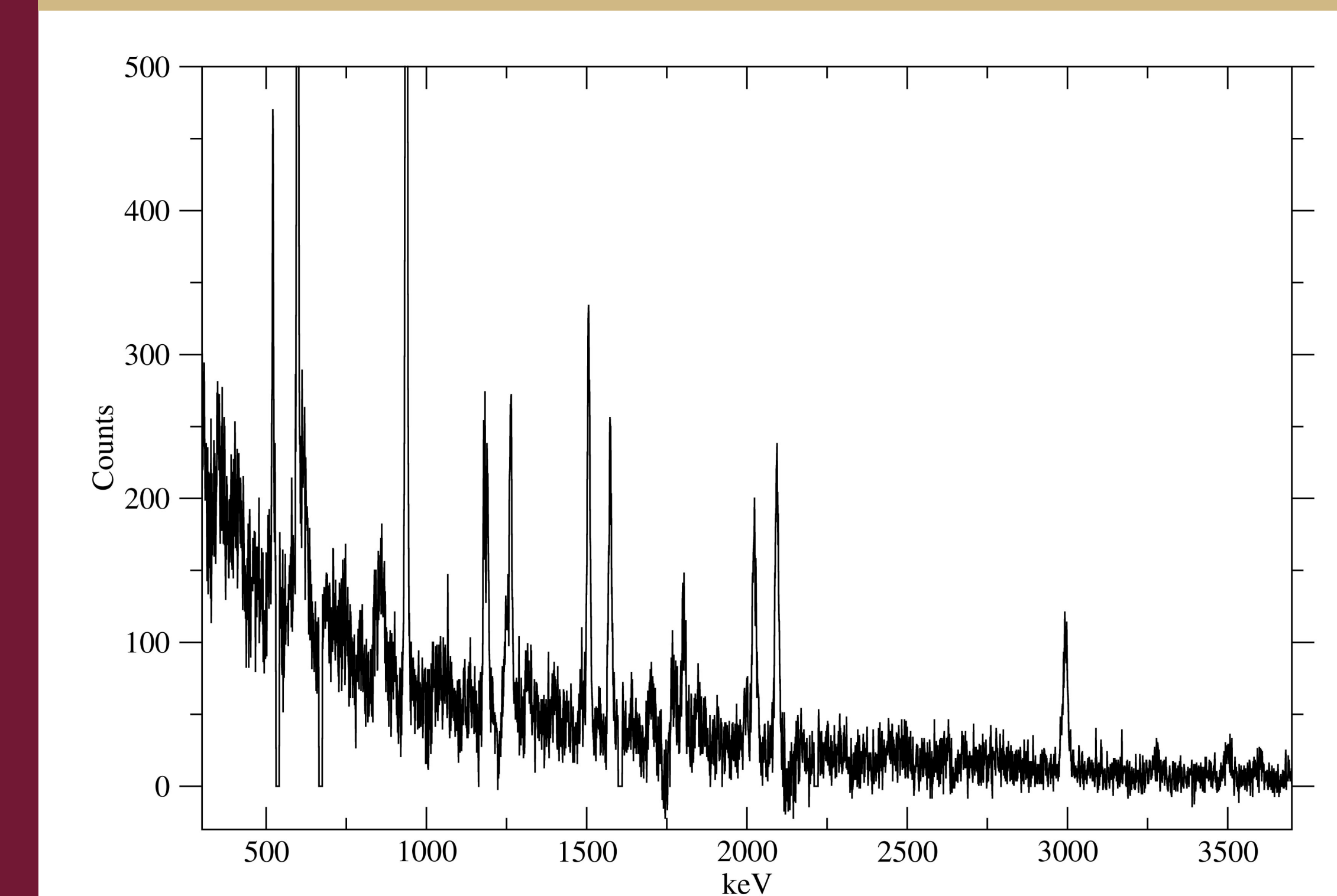
FSU Interaction Theory With Experimental Levels



The 1606+2218 Gate



The 324 Gate



Acknowledgements

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