Shape Coexistence from Lifetime and Branching Ratio Measurements in ^{68,70}Ni

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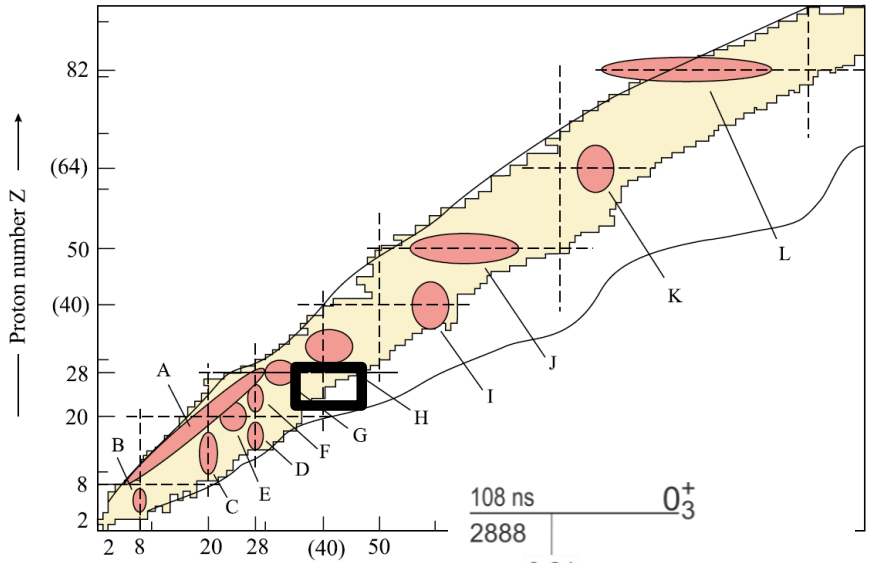
Shape Coexistence in Ni



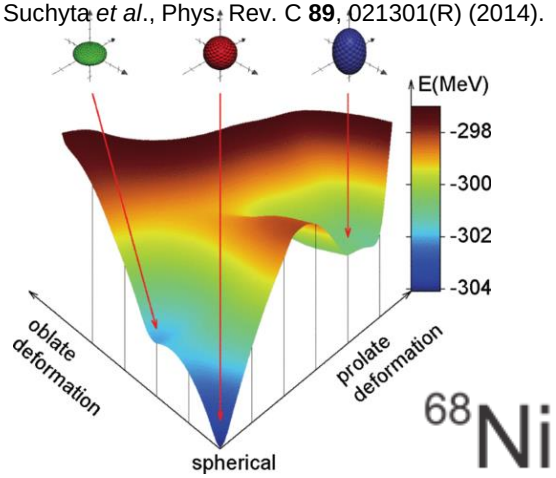
K. Heyde and J. L. Wood, Rev. Mod. Phys. **83**, 1467 (2011).

28

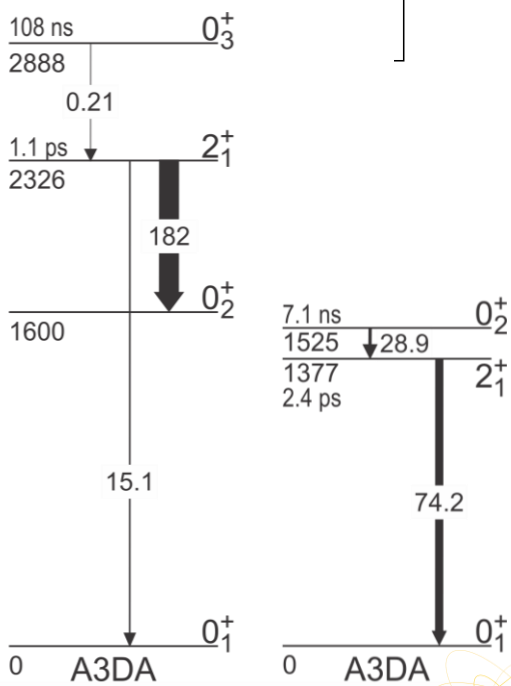
^{67}Ni	^{68}Ni	^{69}Ni	^{70}Ni
^{66}Co	^{67}Co	^{68}Co	^{69}Co
^{65}Fe	^{66}Fe	^{67}Fe	^{68}Fe

40

S. Suchyta *et al*., Phys. Rev. C **89**, 021301(R) (2014).

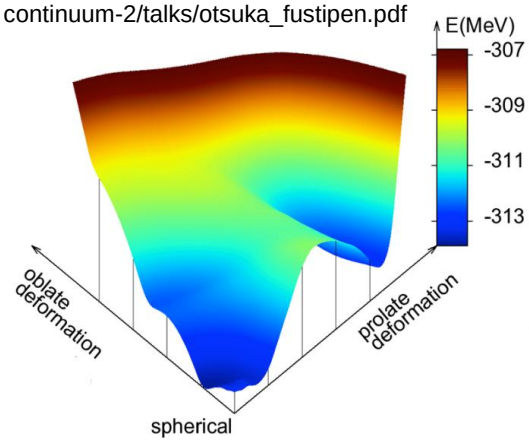


^{68}Ni



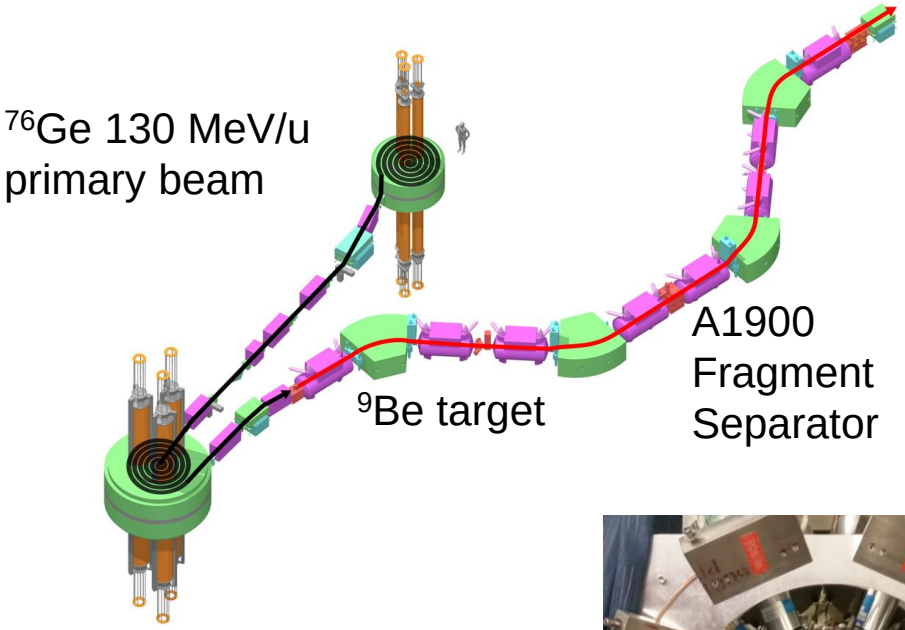
http://fustipen.ganil.fr/conferences/2014/workshops/understanding-nuclear-structure-and-reactions-microscopically-including-the-continuum-2/talks/otsuka_fustipen.pdf

^{70}Ni

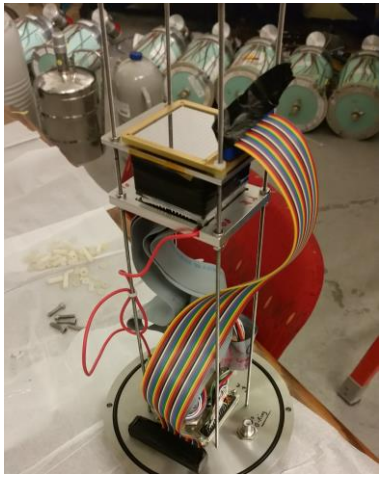


Experiment

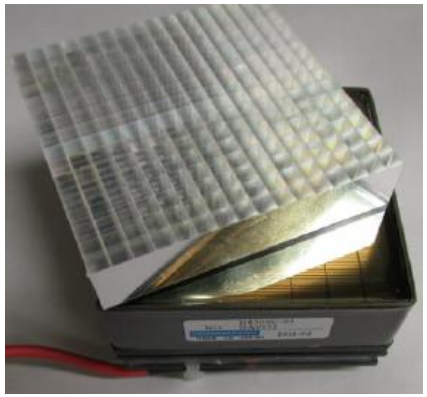
Cocktail beam A~68 delivered to experimental end-station



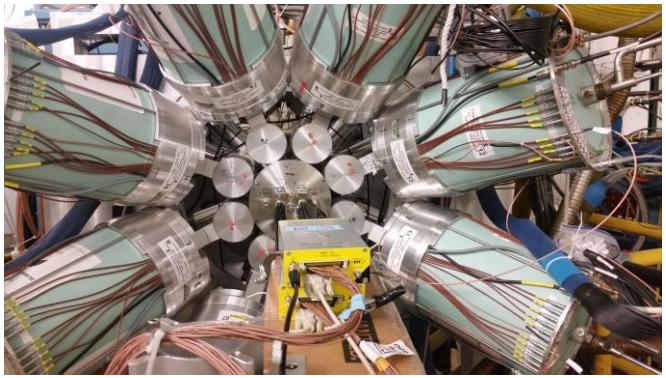
Central Implantation Detector



M. Alshudifat *et al.*, Physics Procedia **66**, 445 (2015).



Half of 16 HPGe SeGA array

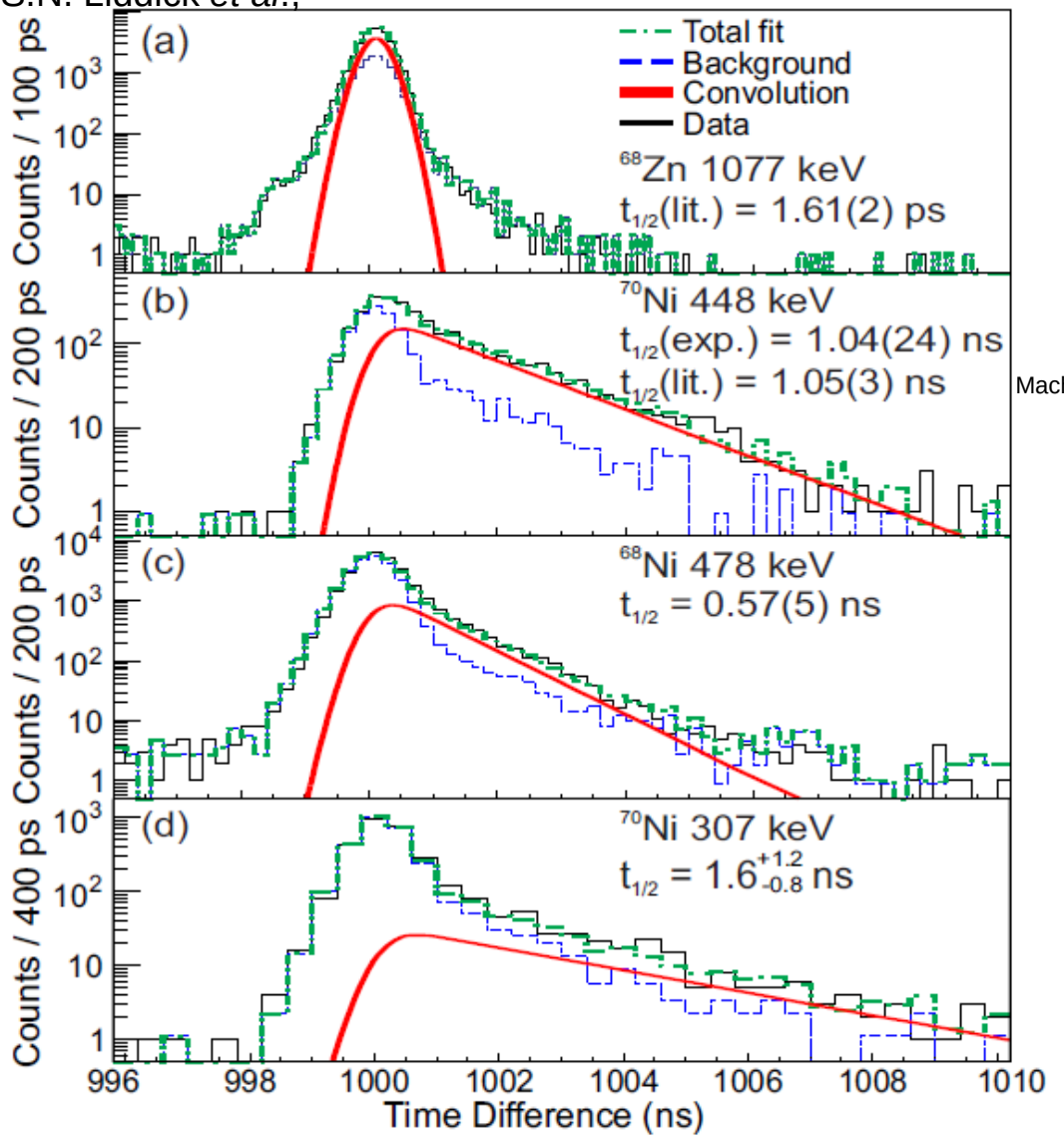


W. Mueller *et al.*, Nucl. Instrum. Methods Phys. Res. A **466**, 492 (2001).

10 $LaBr_3$(Ce) array

Lifetime Results

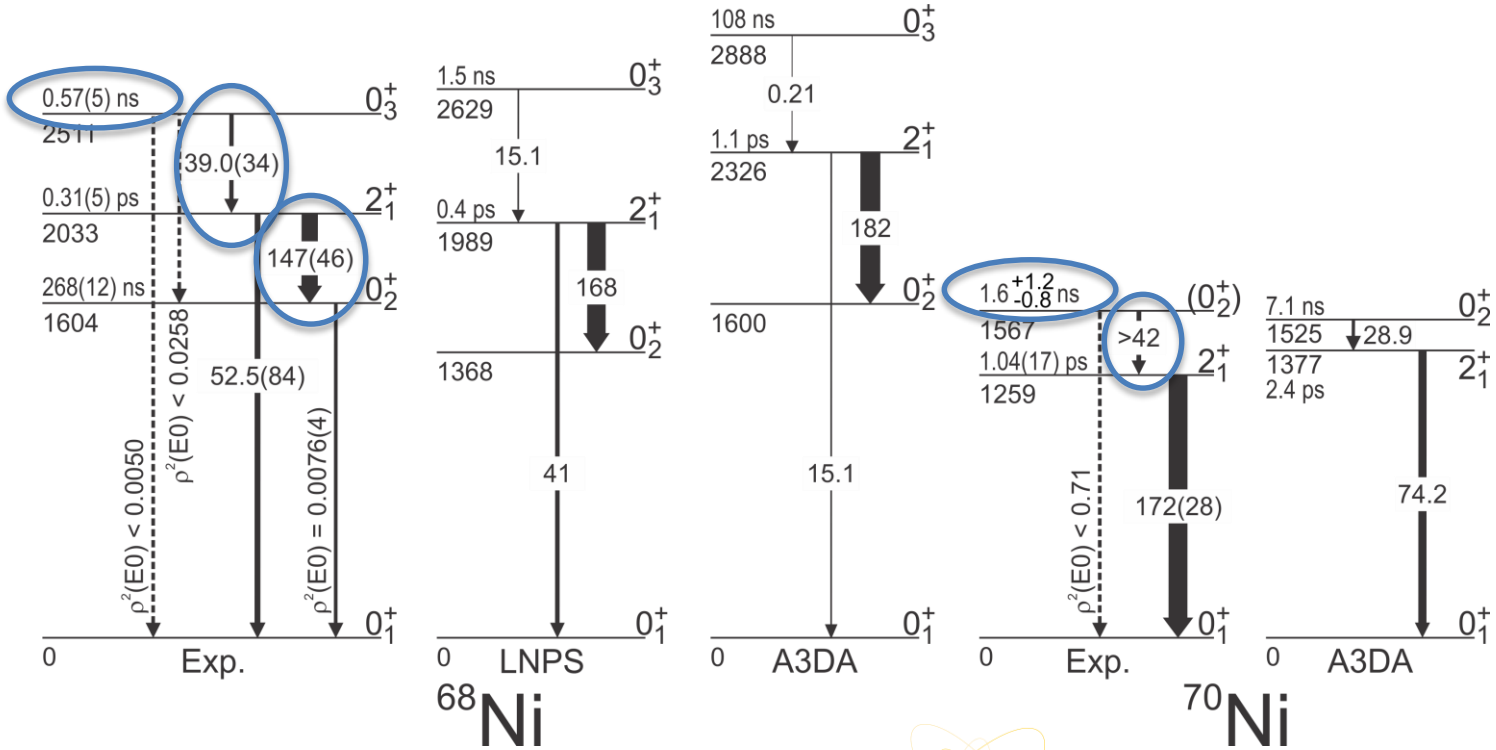
B.P. Crider, C.J. Prokop, S.N. Liddick *et al.*, (submitted)



Mach *et al.* Nucl. Phys. A **719**, C213 (2003)

Implications

- Comparison to theory indicates that the calculations need modifications to describe the third 0^+ state in ^{68}Ni and second 0^+ state in ^{70}Ni.



Acknowledgements

Collaborators

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ARL: J. J. Carroll and C. J. Chiara **UMD:** J. Harker and W. B. Walters

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