IS556
Single-particle states in ^{81}Zn populated in single-neutron transfer reaction ^{80}Zn(d,p)

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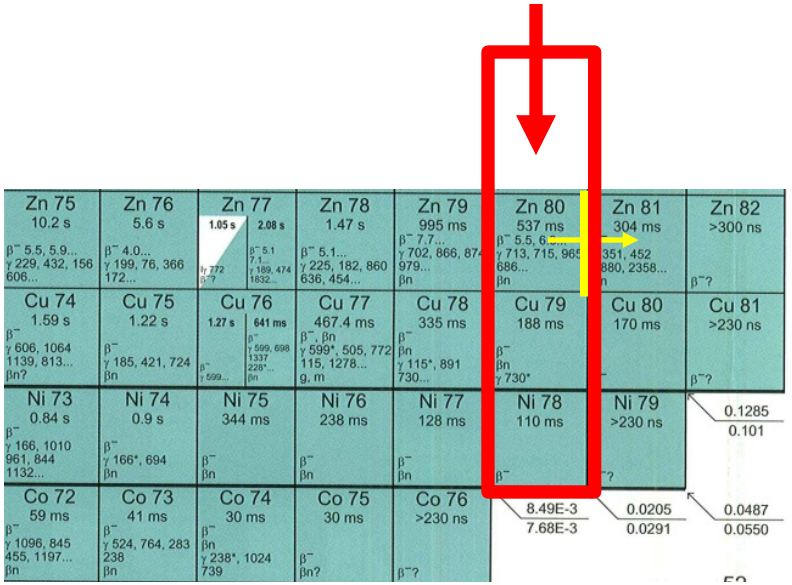
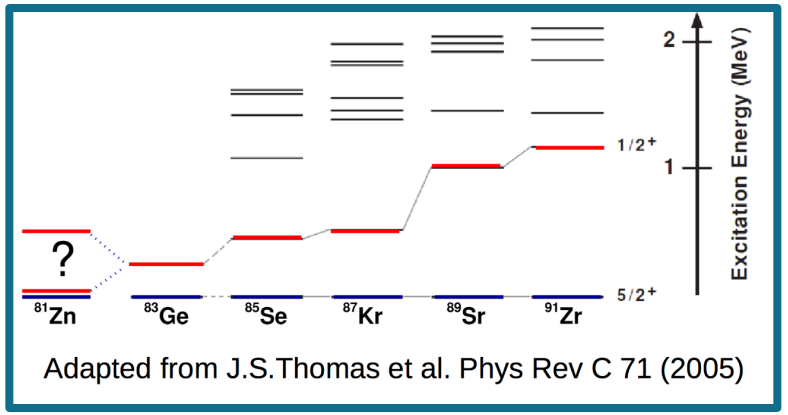
Physics case

IS556

- Magicity of ^{78}Ni (Z=28, N=50)
- Evolution of neutron shells:
  as Z decreases, $d_{5/2}$ becomes progressively less bound
  (tensor interaction with protons in $f_{5/2}$)
- Spin assignment of ^{81}Zn gs uncertain at the time of the proposal
- New results expected from RIKEN data
  β-decay of (among others) ^{81}Cu
  Xu et al PRL 113, 032505 (2014)





Adapted from J.S.Thomas et al. Phys Rev C 71 (2005)

Status

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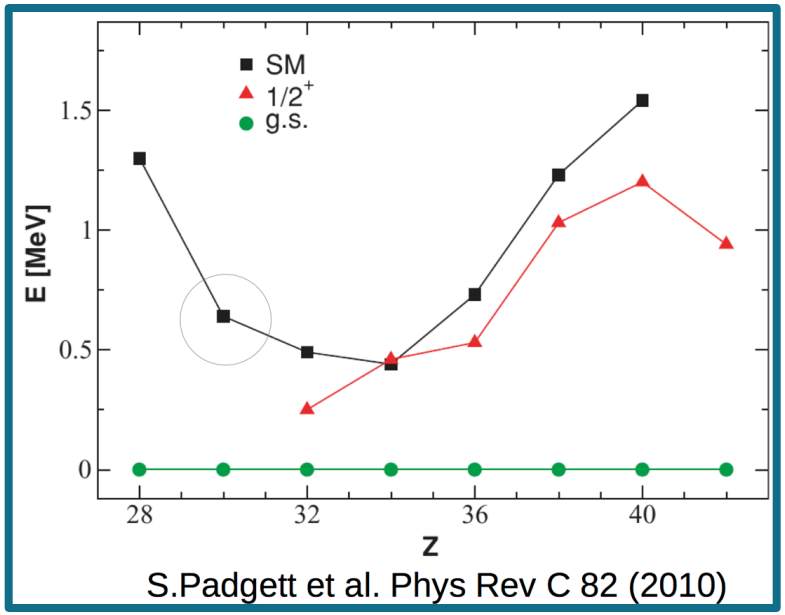
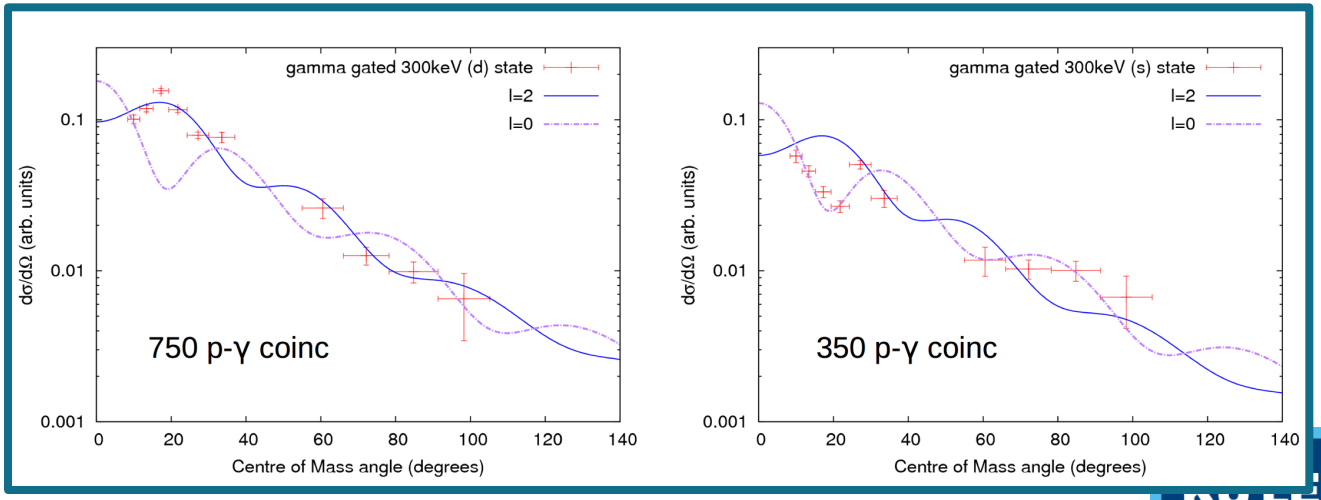
- Approved Oct 2012, 36 shifts
  21 lasers on + 15 off
- ^{80}Zn beam at almost 10^4 pps
  1 mg/cm^2 target
  (d,p) cross sections around 50 mb
  ≈5000 proton events in a week
  good discrimination at 5.5 MeV/u
- p-γ coincidences depend on energy of the excited state





Status IS556

- Elsewhere: ^{80}Zn development requested at TRIUMF
- 10 MeV/u not useful – cross section drops
- A thick-target measurement (only relying on γ-rays) is probably not interesting enough (results from RIKEN)
- ^{78}Zn(d,p) published last year (R. Orlandi et al, PLB 740 (2015) 298)
- Need T-REX at backward angles
  T-REX upgrade ongoing

Not for 2016(?)
But certainly good reasons to plan it as soon as new T-REX is available

IS587

Characterising excited states in and around the semi-magic nucleus ^{68}Ni using Coulomb excitation and one-neutron transfer

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Status IS587

- Motivation: nature of excited states in ^{68}Ni
  evolution of $d_{5/2}$ orbital
- Proposed Oct 2013
  Coulex: wait for MSU results and ISOLDE decay
  Transfer: 9 shifts
- Beam 1.4x10^4 pps, target 200 µg/cm^2
  → ≈800 proton counts at backward angles in 3 days
- Results from GANIL not yet published
  (but thesis available)

- Addendum to be submitted in the summer
- Very interesting and "straightforward" case for transfer