SN2014J: An unusual explosion?

Surprisingly, we find the lines from ^{56}Ni decay (τ~8.8 days) at 158 and 812 keV only ~20 days after the explosion….

A belt of He accreted from the companion star, exploding, and triggering the explosion of a CO white dwarf provides a plausible explanation

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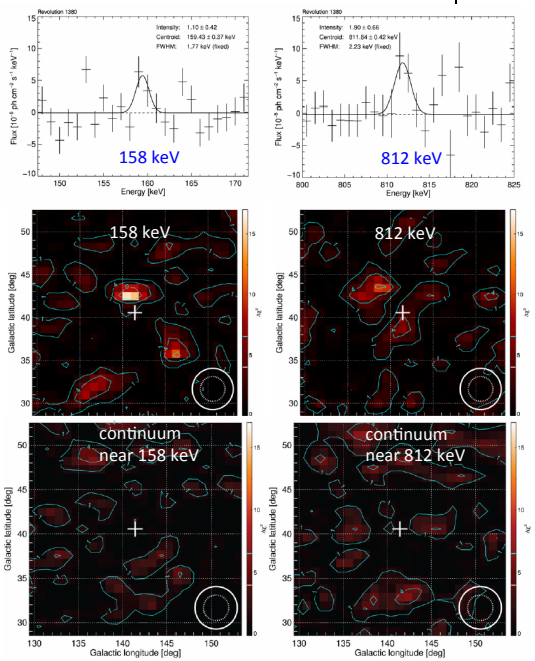
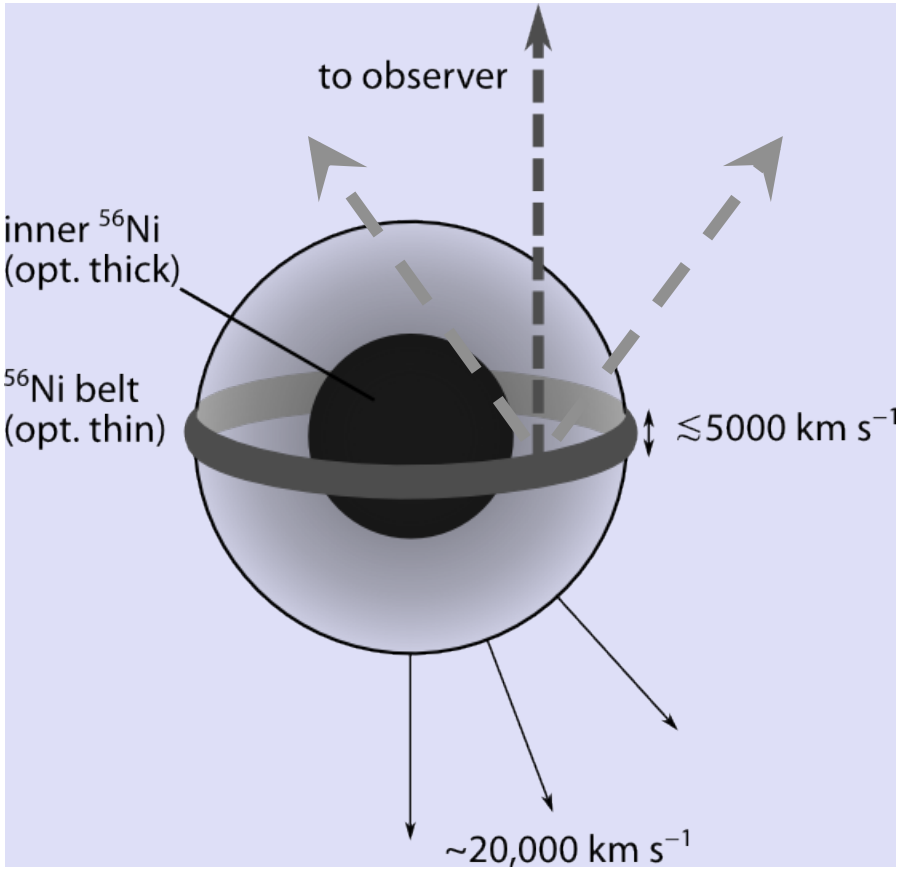
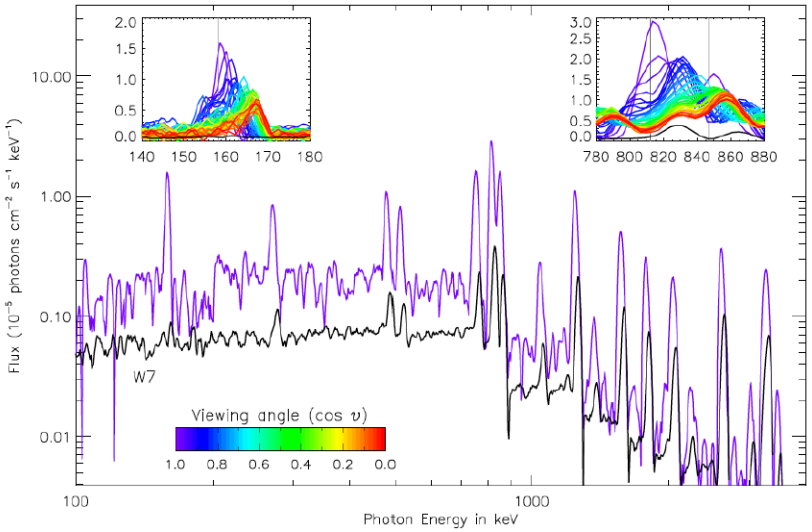
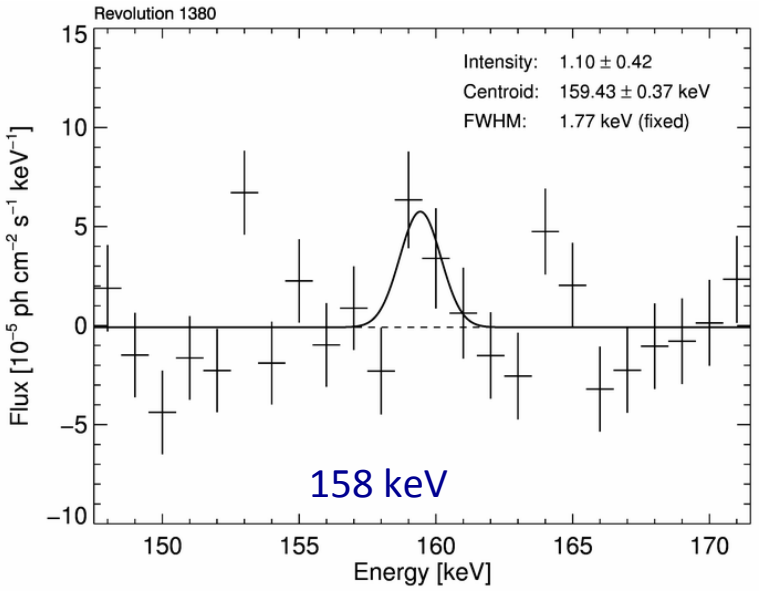
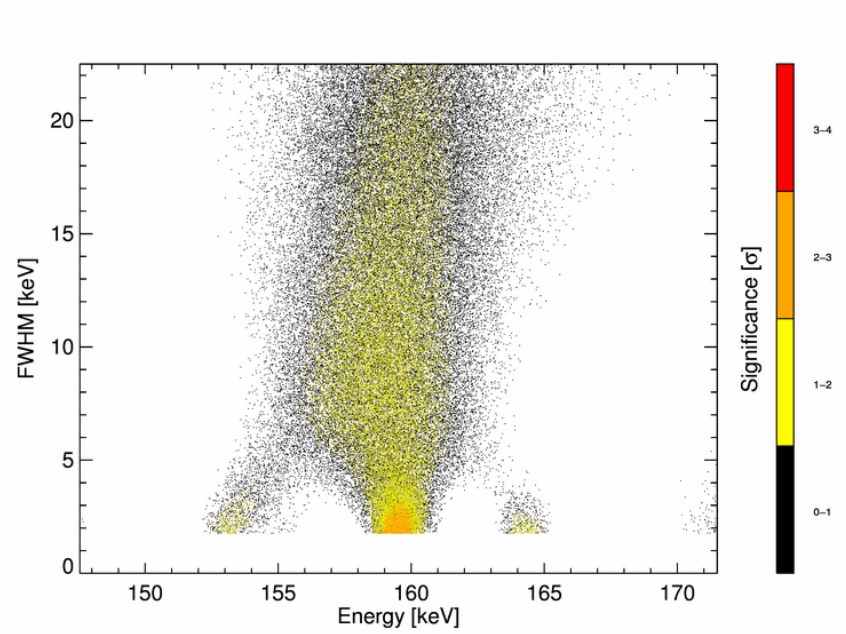






Line Uncertainties





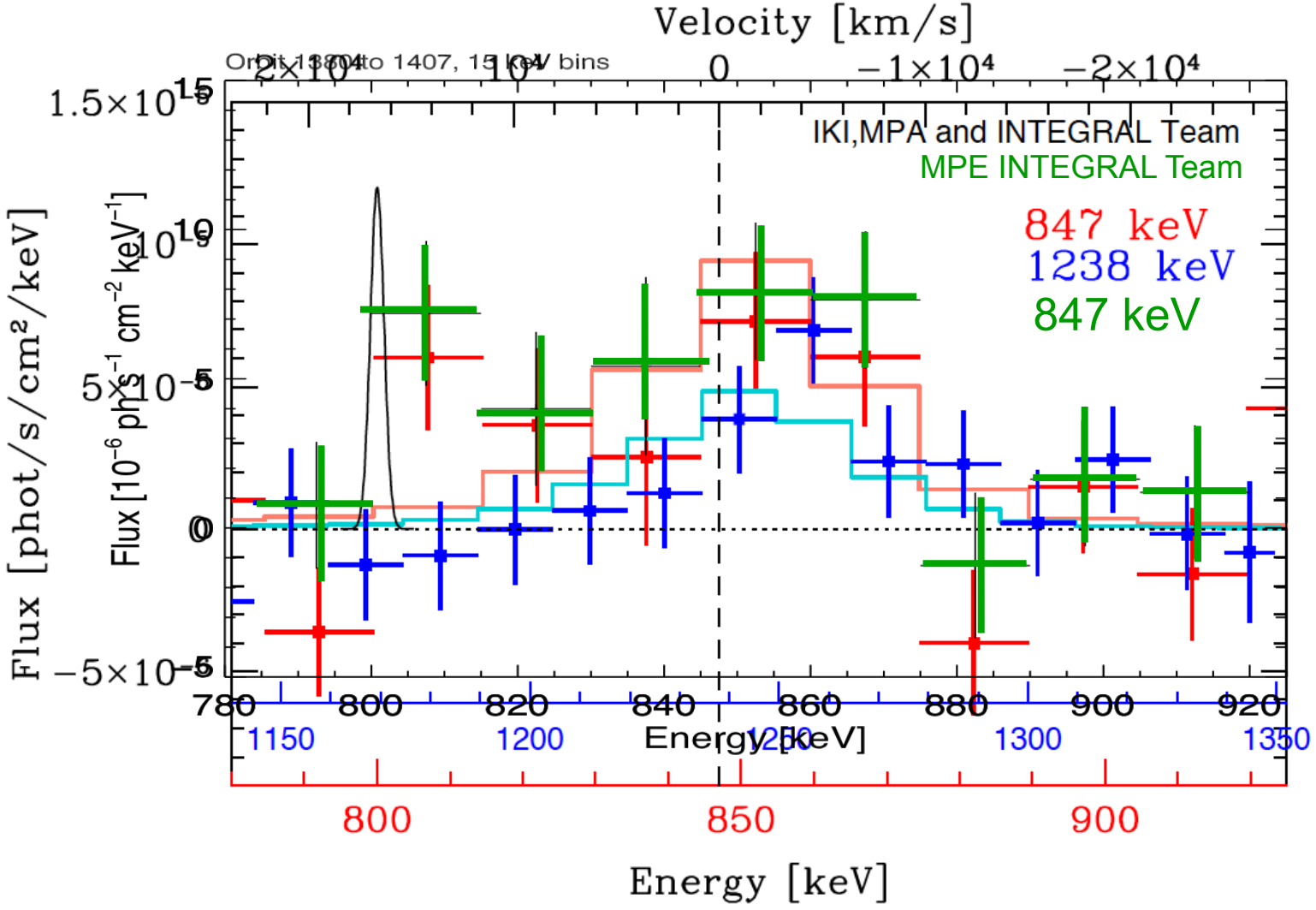
- Random Search: Try to Fit a Line (Centroid,Intensity, Width)

☆ Depending on resolution of the analysis method, and on fitting approach, results may differ

☞ Narrow line, ~unshifted

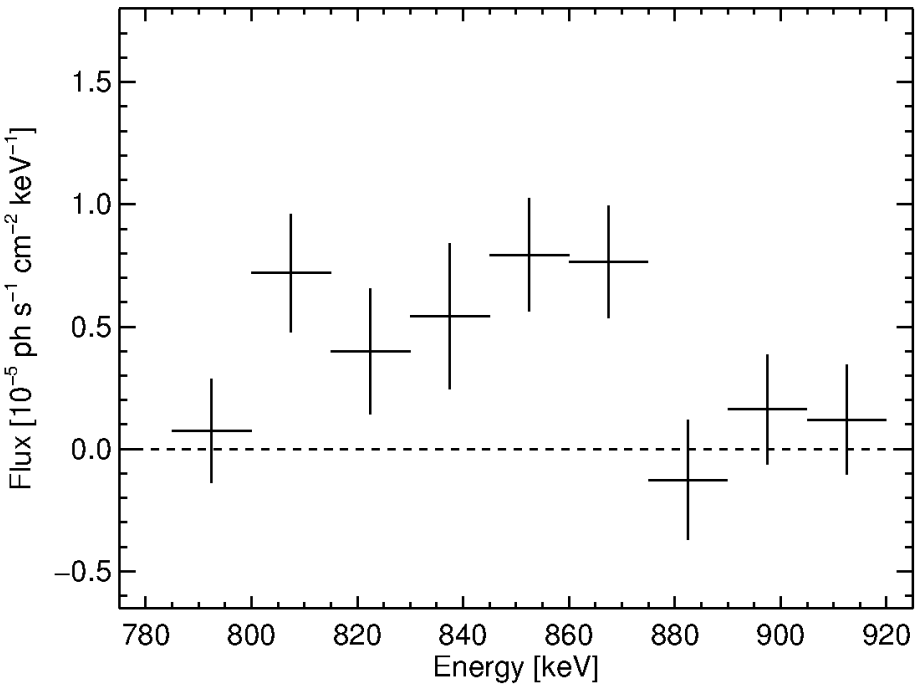
Longterm Data: Broad Lines from ^{56}Co!

- INTEGRAL Obs from 31 Jan till 26 Jun 2014



SN2014J data Jan – Jun 2014: ^{56}Co lines

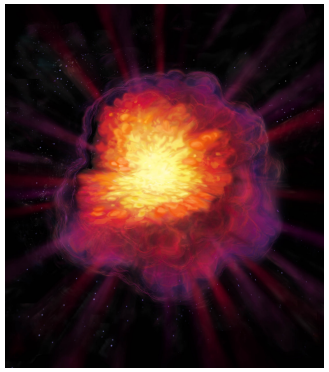
- The 847 keV line from ^{56}Co decay
- Different spectral binning



- Structured spectrum – all from the broadened 847 keV line?
  - *Diehl et al. 2014 (submitted)*

SN2014J data Jan – Jun 2014: ^{56}Co lines

- The ^{56}Co decay lines
- Different spectral binning
- Different epochs



- Structured and evolving spectrum
  - all from broadened ^{56}Co decay lines?

- *Diehl et al. 2014 (submitted)*