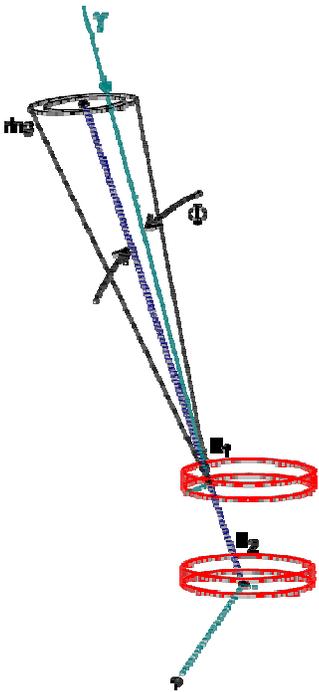
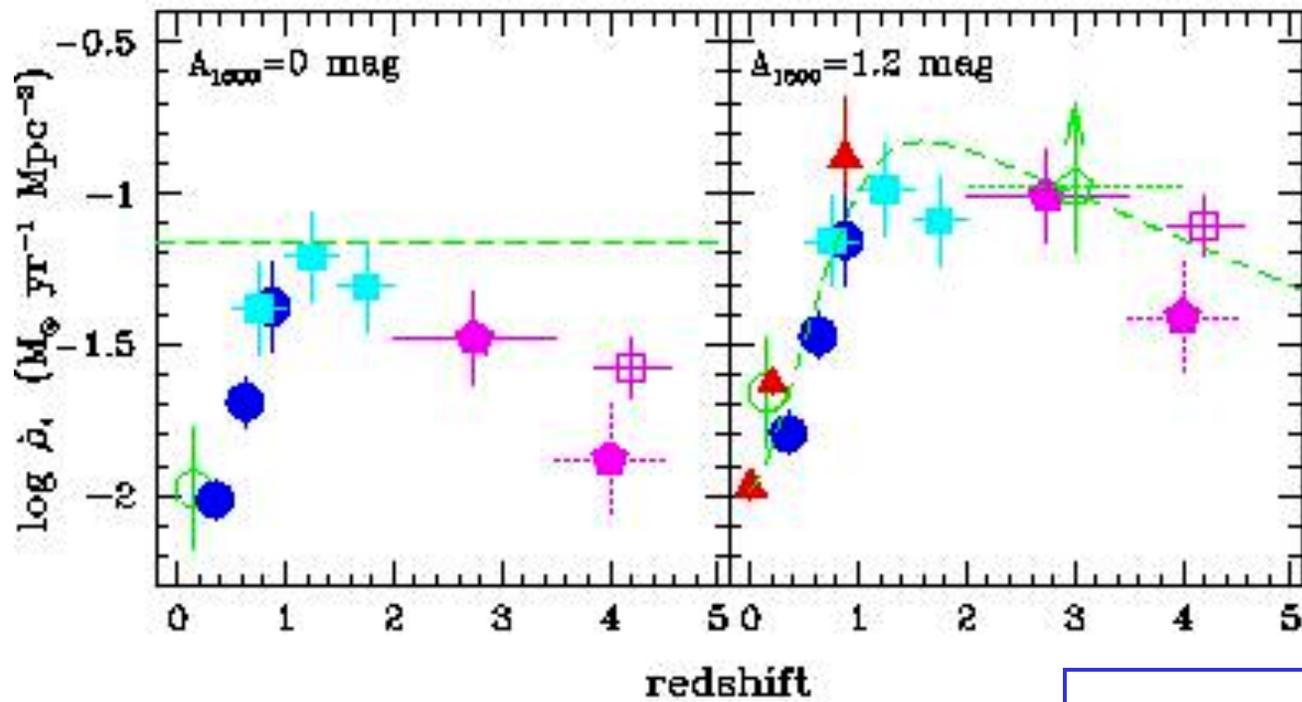


Studying Cosmic Star Formation with a Gamma-Ray Detector

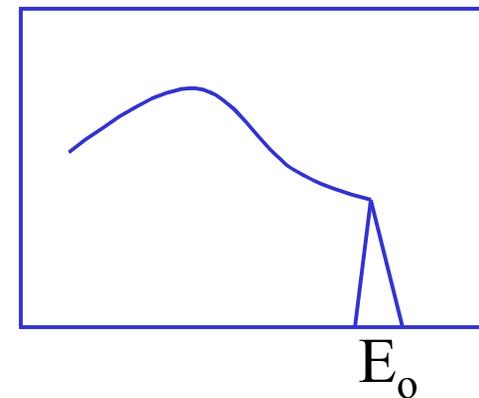
- For every ^{56}Fe nucleus ever created in SN Ia, there are ~ 0.5 847 keV (in SN rest frame) photons flying around.
- Brightest steady line (but smeared out).
- Follows cosmic star formation (but delayed by SN Ia binary evolution.) OK, at least very interesting study of SN Ia.
- Isotropic (essentially); must make very accurate **absolute spectral measurement**. Counting on that zero-background instrument...
- All other lines are insignificant by comparison.



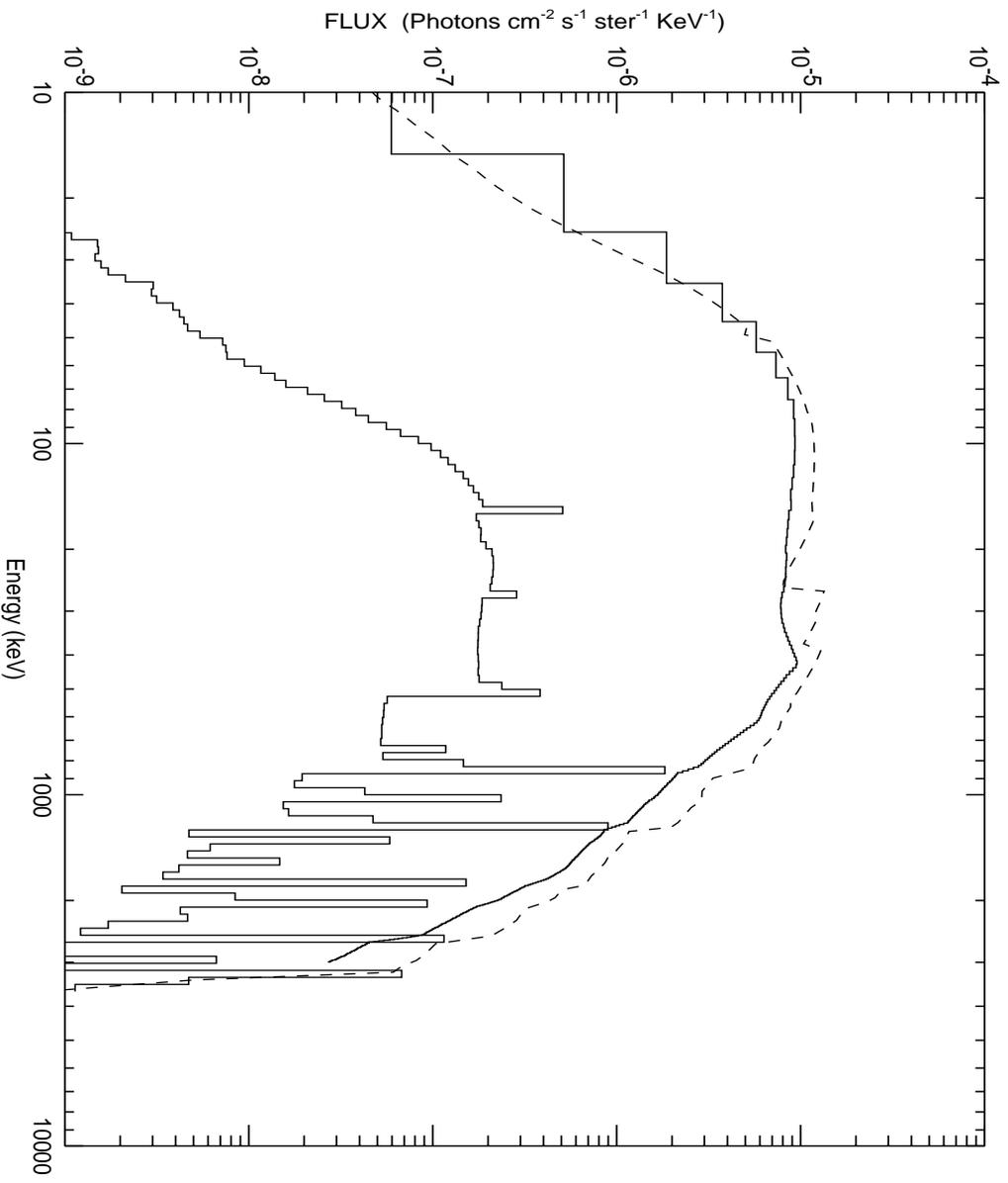
The Cosmic Star Formation Rate



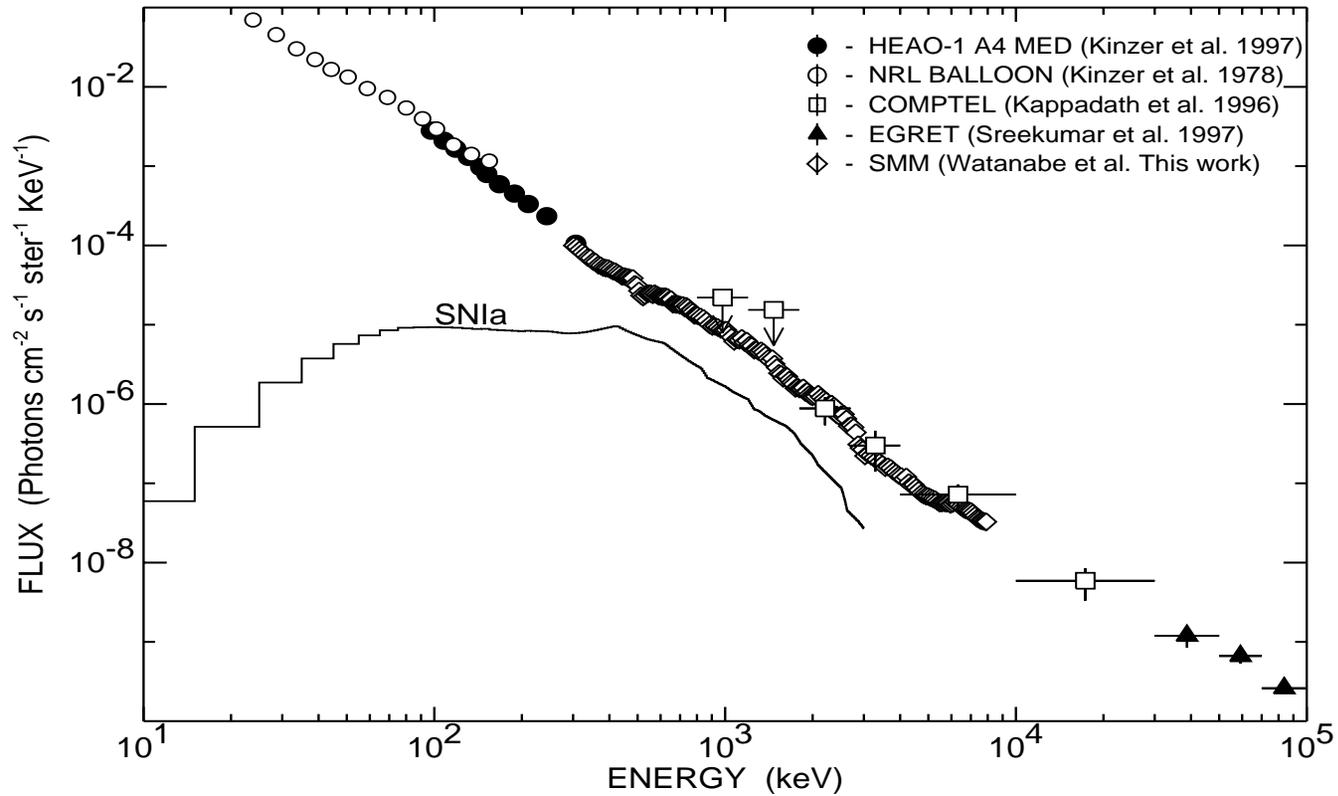
Madau 1999



Comparison of two calculations: dashed curve based on number of Fe nuclei in the universe (The et al. 93), and solid curve (max) from Cosmic SFR studies (Watanabe et al. 99). Lower histogram is time-integrated SN Ia rest-frame spectrum.

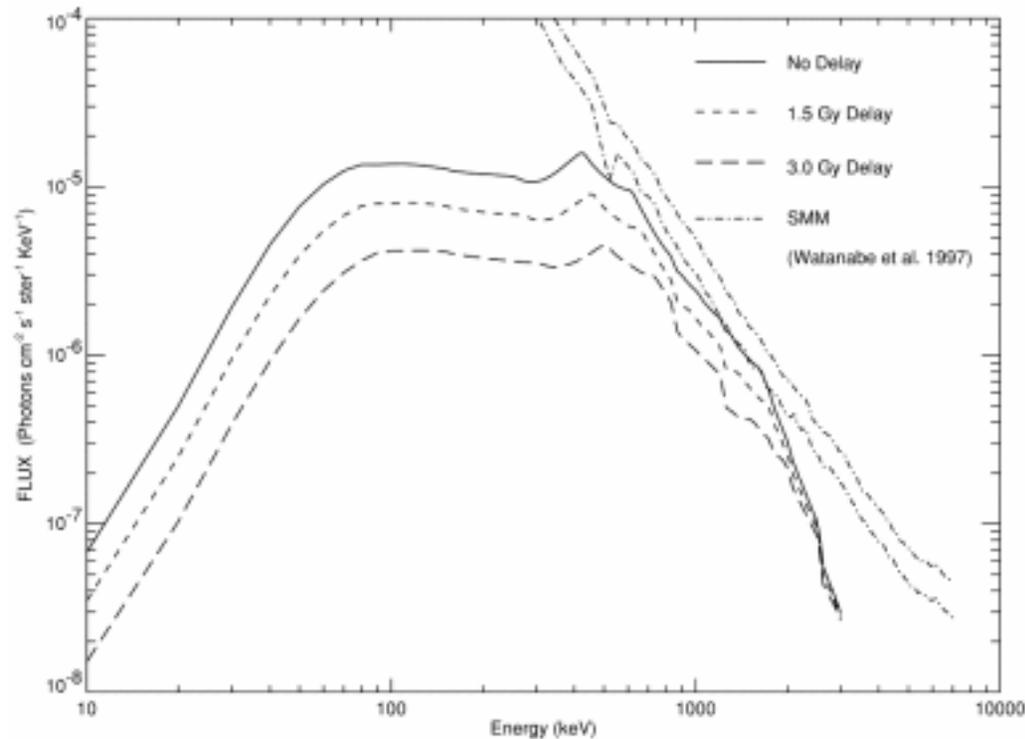


Current Status



Best estimate of SN Ia contribution,
and selected data.

Details (here SN Ia binary evolution delays) do matter -- and should be measured.



The sizes of the edges at rest energies, and the peak at $E_o / (1 + z_{\text{max}})$ are the discriminating features.