

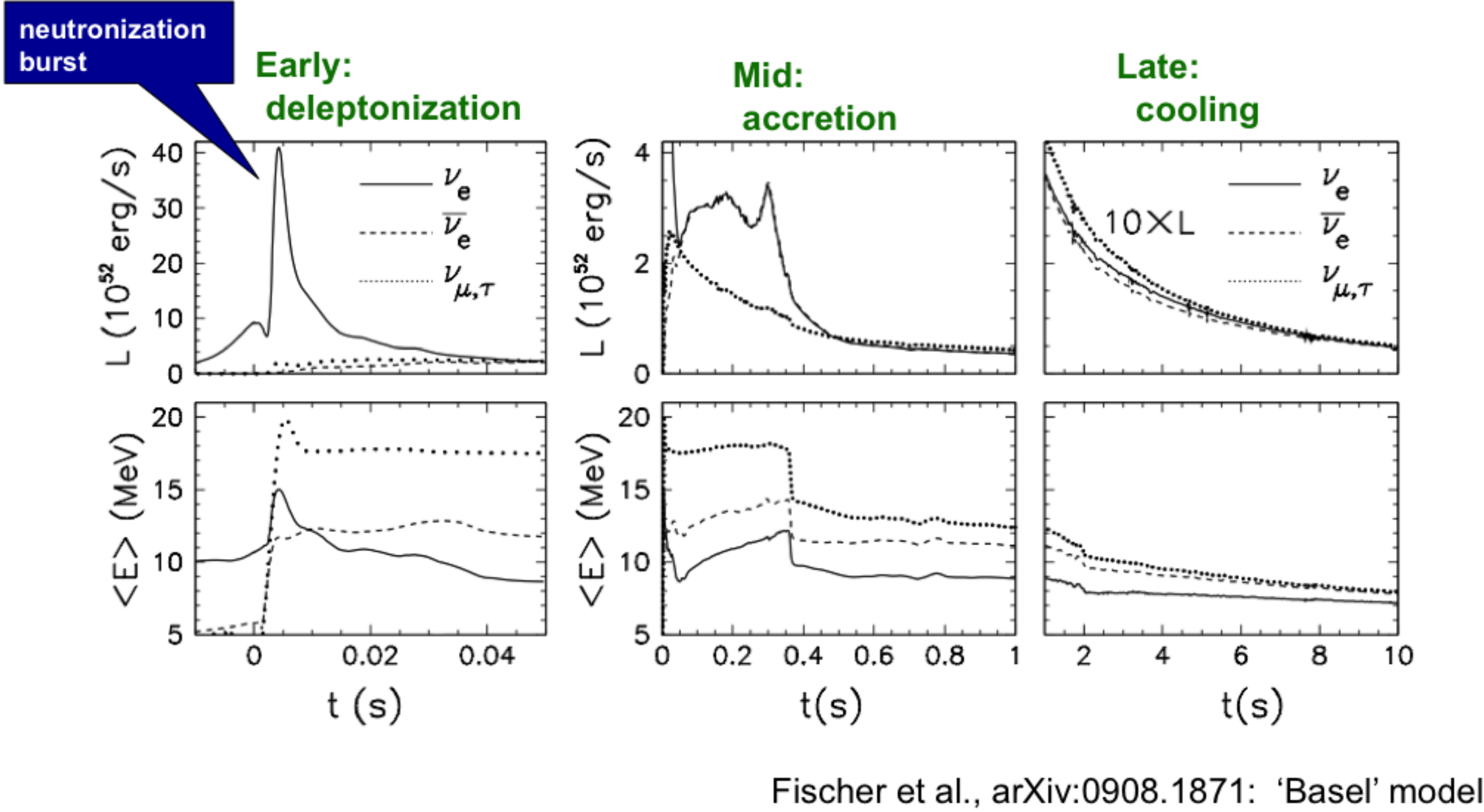
SNOWGLoBES: SuperNova Observatories with GLoBES



K. Scholberg

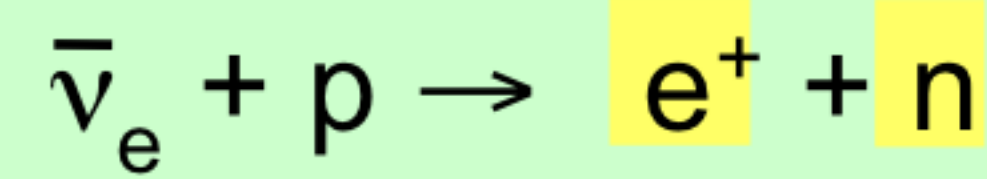
Duke University

Core collapse supernova neutrinos: physics and astrophysics information in the energy spectra as a function of flavor and time

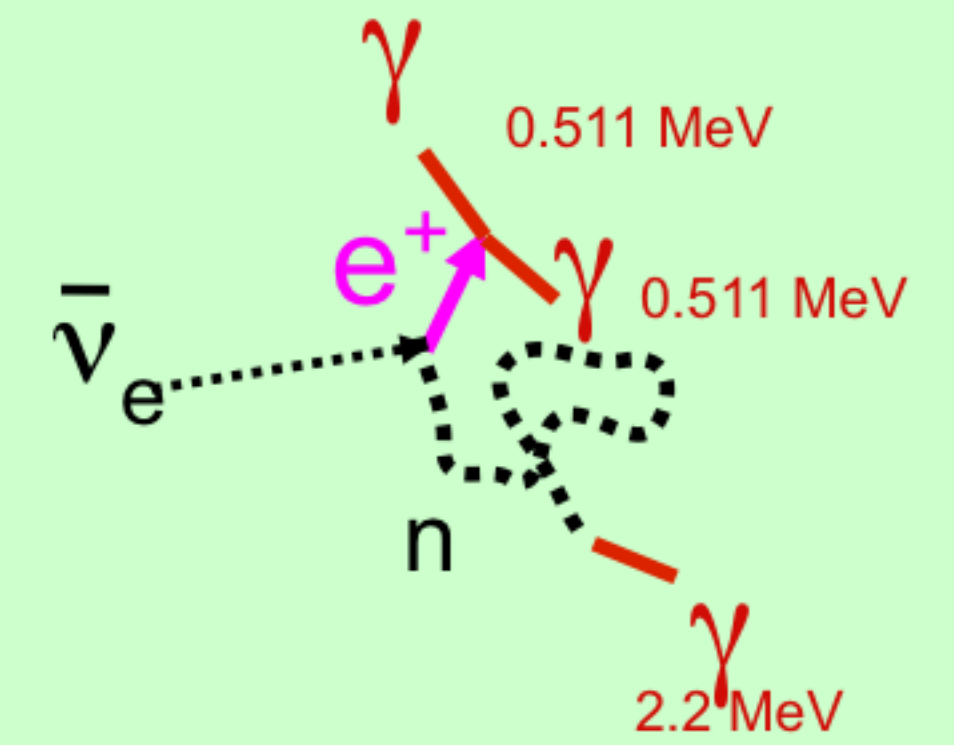


Neutrino interactions in the few-tens-of-MeV range

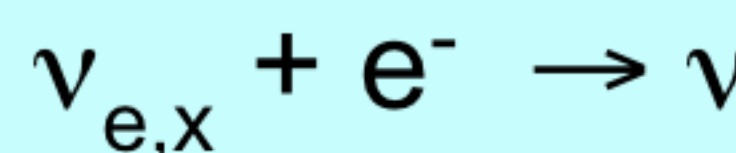
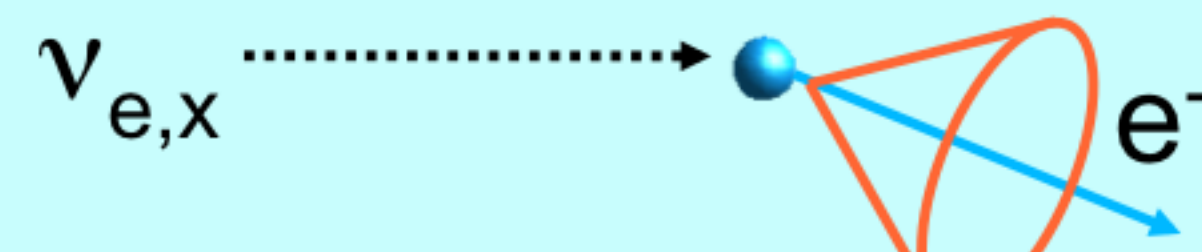
Inverse Beta Decay (CC)



In any detector with lots of free protons (e.g. water, scint) this dominates

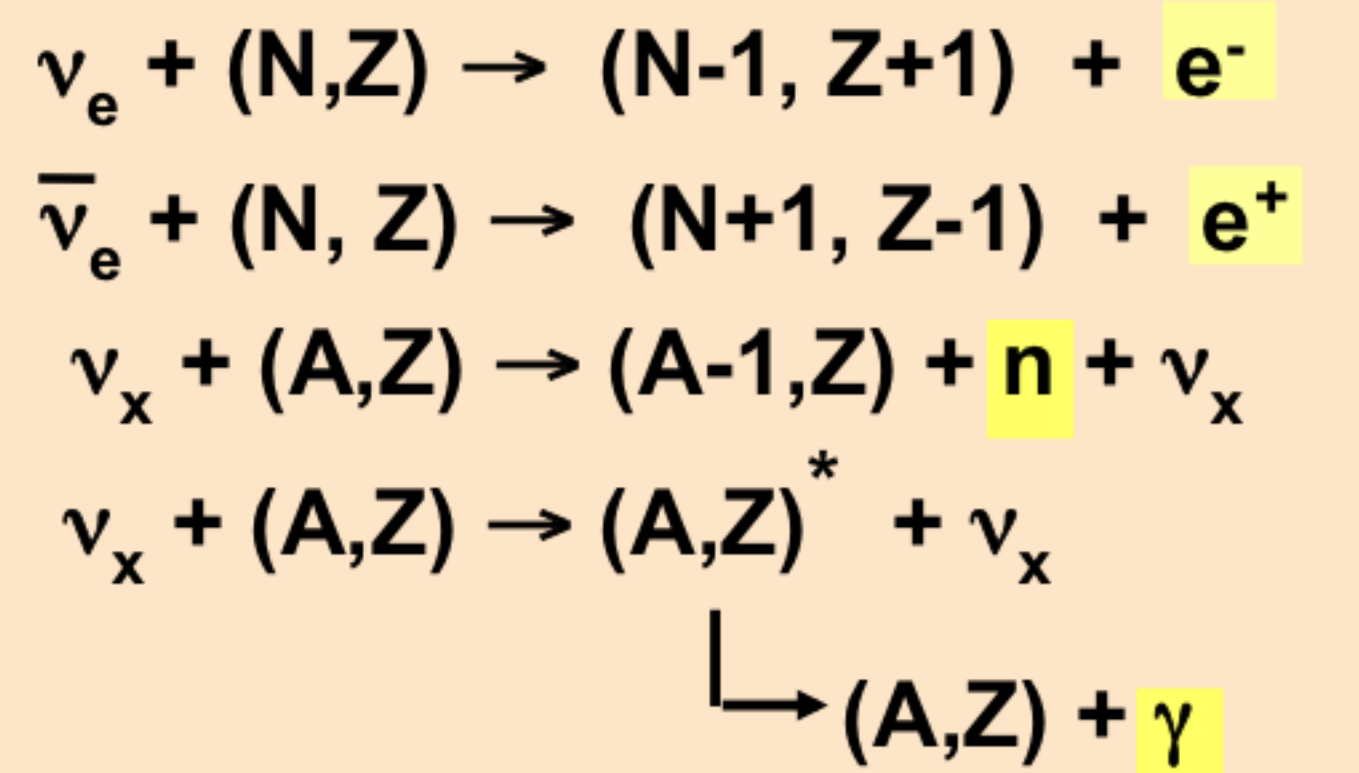


Elastic scattering on atomic electrons

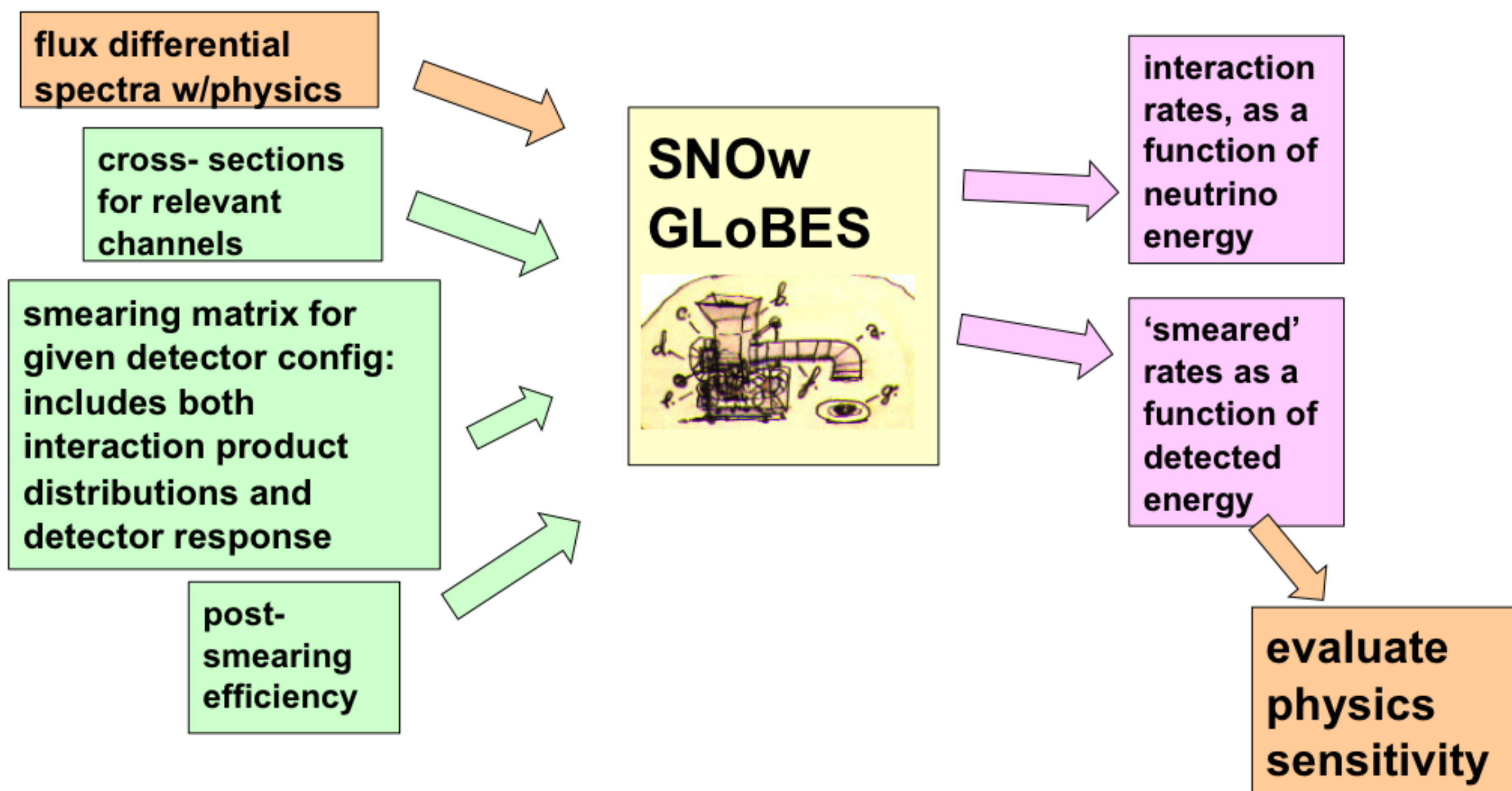


(useful for pointing)

CC and NC interactions on nuclei



To evaluate sensitivity to different features of flux/physics, we need to fold flux \otimes xscn \otimes detector response



SNOWGLoBES package contents

- driving script
- data files:
 - cross-section files for O, Ar, C, Pb (+...)
 - smearing and efficiency files for several detector configurations (100kt, LAr, scint, HALO)
 - example flux file(s)
- example plotting scripts
- documentation w/refs

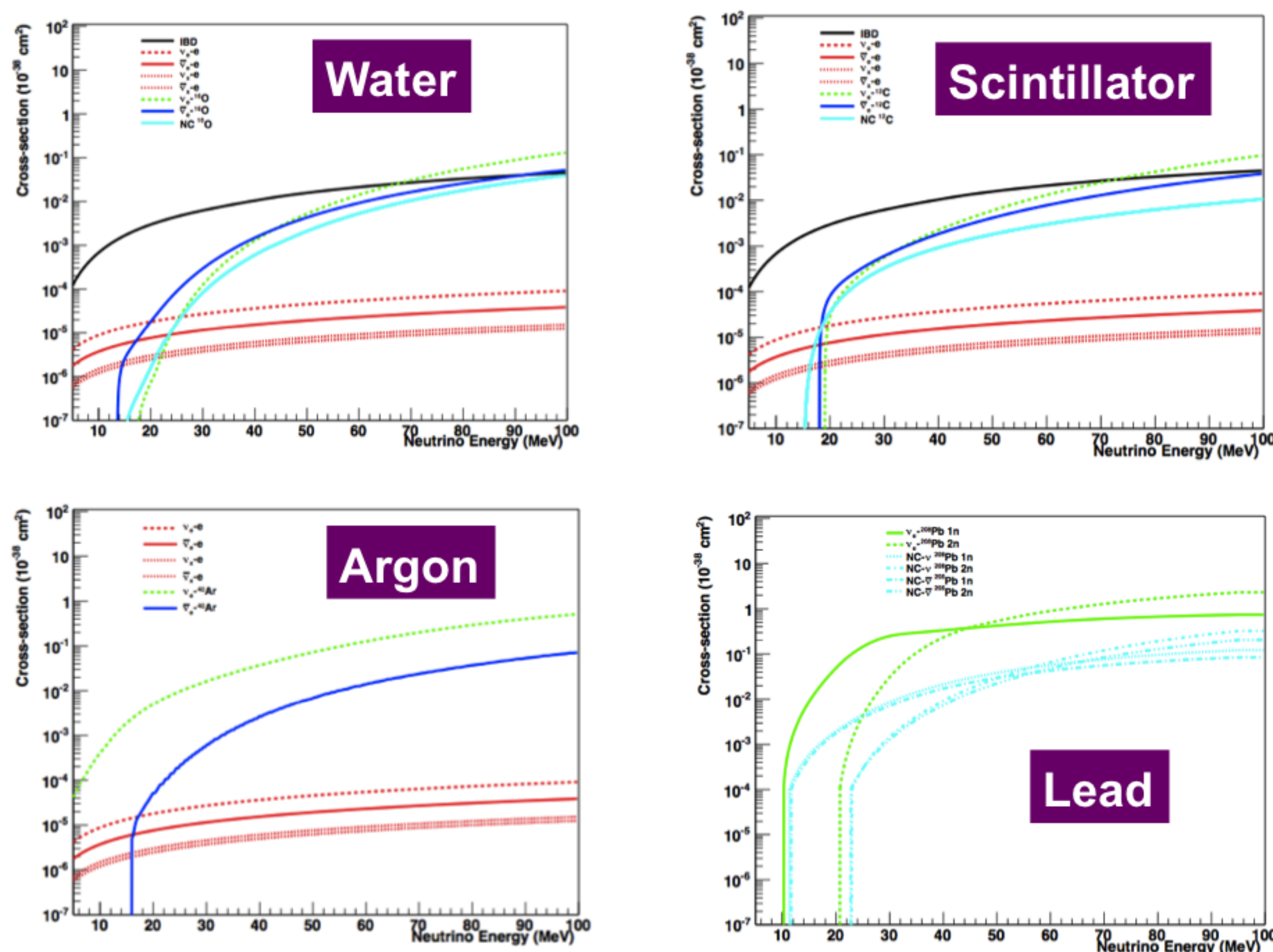


A. Beck, F. Beroz, R. Carr, KS, W. Johnson, A. Moss, D. Reitzner, D. Webber, R. Wendell, A. Dighe, H. Duan, A. Friedland, J. Kneller

- Smearing and efficiency files provided are based on:
 - published information (resolutions etc.), reasonable assumptions
 - for LBNE water configurations: simulation output
- Users (typically) would provide their own fluxes
- Users could use the packaged detector smearing datafiles, or provide their own

<http://www.phy.duke.edu/~schol/snowglobes>

Interaction cross-sections



Event rates computed with SNOWGLoBES

