Interstellar emission
model and tool

Seth Digel, Jay Norris, Eduardo do Couto e Silva, Y. Lin, Massimo Fiorucci, Tune Kamae, Stan Hunter, Olaf Reimer, Mutsumi Sugizaki, Isabelle Grenier
Interstellar emission model

- ISRF cube:
  - work in progress in Garching & Bochum/Santa Cruz

- Gas cube:
  - HI inversion at GSFC
  - HII surveys available
  - H2 inversion… further down
  - M(CO-g) vs M(IR-g) problems ahead

- Radiation processes:
  - p-p, p-n, p-He, p-C interactions, resonances: DPMJET v3 (Bochum), GEANT4
  - Review of cross sections vs. data (SLAC, Italy)
  - Brem with He etc…

- CR propagation:
  - GALPROP at Garching, prop. model at Bochum
  - Nearby sources and propagation: Bochum & Saclay
  - CR/matter coupling at GSFC
IS emission model

• Tests
  – On standard EGRET data
  – On ‘cleaned up’ EGRET data

• ISM Workshop
  – Next year in Paris

• People support (~ 12)
  – Garching, Bochum, Saclay, HEPL, Goddard, Italy?, SLAC
Interstellar emission tool A8

- **Input =**
  - IS emission cube + E band + region
  - + Gmult + Gbias (within limits for choice of E and region)

- **Output =**
  - space-energy array with differential intensities

- **Tessellation**
  - IS emission cube probably in inertial Gal. Ref. Frame and (l,b)
  - gridding scheme to be tested with simulated data
  - Gridding decision: when? how?
  - (x,y,z), (l,b), (α,δ) to final grid module to be called by many other modules