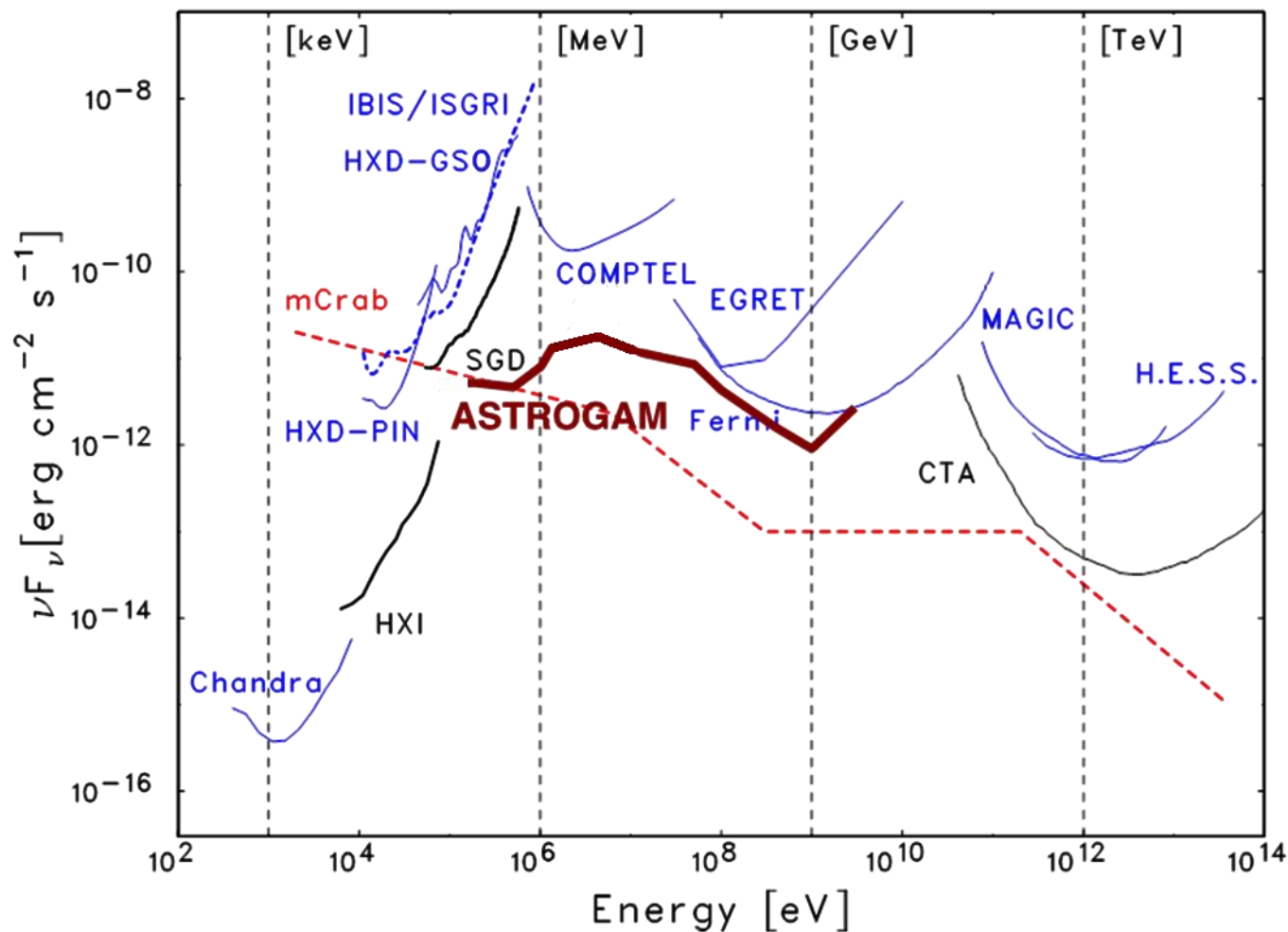


ASTROGAM Science Topics

Discussion, Dec. 10, 2014

ASTROGAM 3.5 yr survey (goal) sensitivity



Adapted from Takahashi et al. (2013)

- **ASTRO-H/SGD** – 3σ sensitivity for 100 ks exposure of an isolated point source
- **COMPTEL** and **EGRET** – sensitivities accumulated during the whole duration of the CGRO mission (9 years)
- **Fermi/LAT** – 5σ sensitivity for a high Galactic latitude source and after 1 year observation in survey mode
- **ASTROGAM** – 5σ sensitivity for a high Galactic latitude source after 3.5 years in survey mode

- **unexplored energy range for**
 - Galactic compact stars and nucleosynthesis
 - Cosmic rays
 - Dark Matter searches
 - Relativistic jets, microquasars
 - Blazars
 - Gamma-Ray Bursts
 - Solar physics
 - Terrestrial Gamma-Ray Flashes
 - Particle precipitation in the lower magnetosphere

golden science for ASTROGAM

- **ASTROGAM:**
a new window on the Universe
 - **Evolution of matter in the Galaxy**
 - **Cosmic accelerators**
 - **The close & the far Universe**

- **Evolution of matter in the Galaxy:**
the highest resolution MeV-GeV Galactic scan,
nuclear spectroscopy of the ISM & sources,
antimatter, Galactic Center, Dark Matter.
- **Cosmic accelerators:**
transition from accretion to jets, from outflows to
shocks, new types of accelerators, MeV-polarization,
Supernova Remnants, cosmic rays.
- **The close & far Universe:**
Supernovae, high-redshift MeV-AGNs (?), MeV
extragalactic background, GRBs and gravitational
waves, baryon asymmetry

- **ASTROGAM:**
connection with Cosmic Vision
 - Explosive nucleosynthesis
 - Relativistic compact objects
 - Dark matter
 - AGNs and the origin of extragalactic bkg
 - GRBs

ASTROGAM observing modes

- **dedicated pointings motivated by science priority**
 - Galactic scan & GC
 - extragalactic (Cen A, 3C 120, BL Lac, Mrk ...)
- **surveying the sky**