Spitzer Warm Mission Opportunities

Galactic Science
Adam Burgasser (MIT), chair

Steering Committee Reports

- Skrutskie et al.: Galactic Structure/ISM
- Strom et al.: Star Formation
- Knapp et al.: Stars & Brown Dwarfs

Contributed White Papers

- Gould et al.: Microlensing opportunities
- Wright et al.: WISE followup (Porcupine)
- Jura et al.: White dwarfs
Key Science Projects

• Expanded view of the Plane: Glimpse++
• Wide area surveys of OB associations, distant GMCs & outer spiral arms
• Variability studies: YSOs, L/T dwarfs, X-ray sources - piggyback on other projects?
• A deep “wide” survey for brown dwarfs & high-redshift quasars
• WISE (and other IR survey) follow-up

Things we’d kick ourselves for not doing

• Finding the first Y dwarf
• Microlensing & near-field triangulation - taking advantage of the wide separation between Spitzer & ground-based facilities
• IR emission from X-ray sources - limited timeframe for X-ray satellites/GLAST/Spitzer availability
• “Wide” surveys of young clusters/star forming regions
1000 hr “Transition” Program(s)

- SDSS Southern strip
  - 225 deg$^2$ of deep SDSS data ($r' = 25$)
  - Brown dwarfs & high redshift science
- Surveys of widely distributed sources
  - IR excess around White dwarfs
  - X-ray binaries
  - Brown dwarf companions
  - OB associations
- Variability studies

Things we agreed on

- “Suitable” time must be allowed for short (< 100 hr) PI programs - 1/7th is not enough
- Deep “wide” surveys should be conducted with time domain in mind
- Some kind of global data product is essential for enabling community access to large programs - SSC, proposing team, archival PI program
- ToO programs - few ok, not a big priority
Things we did not agree on

- Priority of large programs - no single science program was overwhelmingly supported by Galactic community
- $$$ - who gets it?
  - Spitzer mission should retain funds to maintain quality data product and support
  - Ramp up in archive funding seems logical
  - Concerns about supporting large legacy-like programs on < 1/4 of legacy budgets
  - No qualms on dropping funding for (very) small proposals

Why do Galactic Astronomers need a warm Spitzer?

- Studies of Galactic (disk/bulge) structure need to peer through extinction in plane, at high sensitivity, with good imaging resolution and a wide field of view
- The frontier of brown dwarf research is at low temperatures => MIR imaging
- IR emission from non-IR sources - unexpected, still poorly explained
- WISE, Vista, UKIDSS will NOT be sufficient to address all Galactic science questions - wavelength & resolution are key science enablers