

Group 6 Remit

- **Pros and cons of alternative types of far-IR space missions**
 - **Large cryogenic single-aperture telescopes**
 - **Interferometers**
 - **Direct detection vs. heterodyne interferometry**
- **What is plausibly feasible in the next decade, in terms of technical readiness and affordability?**
- **Discuss the mission concept trade space**
- **Suggest related topics that require further study to prepare for the next Decadal Survey**

Trade Space

- **Sensitivity**
 - **Angular resolution**
 - **Spectral resolution**
 - **Aperture cooling (heterodyne doesn't need it)**
 - **Observing speed/operational issues**
 - **Etc.**
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- **Single dish vs. interferometer**
 - **DD vs. heterodyne**

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- **Single dish vs. interferometer**
 - **Direct detection vs. heterodyne**
 - **All potentially feasible for project start in ~ 5 yrs and flight in ~ 15 years**

Potential Scenarios

- **SPICA happens (Plan A)**
 - Makes it difficult to argue for a larger single cooled dish
 - An interferometric mission would look much more attractive
 - US should make efforts to participate
 - Needs careful approach vis-à-vis Europe and Japan
- **SPICA doesn't happen (Plan B)**
 - Cold single aperture much stronger case than otherwise
- In either case
 - Public engagement is important to ensure that public support for science is there

SPICA Plan

- **Schedule**
 - Call for ESA M4 missions later this year
 - Shortlisting to ~ 4 concepts early 2015
 - Selection of one to fly scheduled for early-mid 2017
 - Launch ~ 2025
- **Programmatics**
 - SPICA will be proposed as joint Japanese-European mission
 - Probably needs to be selected in Europe on that basis
 - Formal incorporation of US contribution as added value could be attractive after selection

Some Topics Needing Further Study

- **R ~ 10,000**
 - Attractive for many science cases
 - In between nominal DD and heterodyne capabilities
- **Heterodyne interferometer**
 - ESPRIT is the only current concept
 - Needs further study to clarify achievable sensitivity, UV plane coverage, cost
 - Worth looking at a structurally connected interferometer
- **Future launchers**
 - Important aspect of any mission to fly ~15 years from now
 - Various new launcher options may arise
 - Important to be aware of possibilities

Next Steps

- **Imperative for the next Decadal Review that the FIR community converges and gets behind a single concept**
- **So the community has to debate and resolve this “backstage” and come out with an agreed party line**
- **A fair and agreed community process to do this needs to be defined and implemented**

Backstage



Resulting Public Consensus



Next Steps

- **Focus on core transformational science**
- **Anything incremental = low priority and might dilute the case or provide weak spots open to attack**
- **Has to be 100% bullet-proof wrt what *Herschel* did, and what ALMA, JWST, SPICA will do**