

IAA Study Group 3.10 Interstellar Precursor Missions

IAA Meeting, Paris, 16-18 March 2009

C.Bruno reporting with G. Matloff

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Study Group Form (comments and form available on <http://www.iaanet.org/news>)

Proposal for Forming an IAA Study Group

Title of Study: *Technologies to enable near-term interstellar precursor missions*

Proposer(s): *Dr David G Fearn, Dr Gregory Matloff*

Primary IAA Commission Preference: *Commission 3*

(From Commission 1 to Commission 6)

Secondary IAA Commission Interests: *Commissions 1 and 4*

(From Commission 1 to Commission 6)

Members of Study Team

Chairs: *Dr David G Fearn (UK) replaced by C. Bruno (I), Dr Gregory Matloff (USA)*

Secretary: *To be appointed (if needed)*

Other Members: *Tentative list of possible contributors (most remain to be contacted):*

Claudio Bruno

Brice Cassenti

Giancarlo Genta

Mike Gruntman

Anders Hansson

Les Johnson

Junichiro Kawaguchi

Roger Lenard

Claudio Maccone

Colin McInnes

Ralph McNutt

Ed Stone

Giovanni Vulpetti

Short Description of Scope of Study: *The aim of the study is to establish which are the critical technologies required to enable interstellar precursor missions to take place within the next 10 to 15 years. In this context, such missions are defined as those reaching to at least 200 astronomical units (AU) from the sun, preferably 400 AU, within a period of no more than 30 years. The study will also establish the status of these technologies and will recommend the research programmes needed to permit such missions to be undertaken successfully.*

Overall Goal: *To provide in a Final Report the information required to persuade funding agencies to consider seriously near-term interstellar precursor missions.*

Intermediate Goals: *To provide the individual contributions necessary to enable the compilation of the Final Report. To hold such technical meetings as are necessary to expedite the overall programme.*

IAA, Paris, October 2000

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Methodology: *The study has been broken down into clearly defined individual sections. These will be allocated to lead writers, who have the necessary acknowledged expertise to produce authoritative texts. They will produce an initial draft in each case, consulting as widely as appropriate. The supporting experts will then provide additional text as necessary, and will also act as editors where required, so that a consensus view is obtained. These individual contributions will then be compiled into the Final Report by the Chairs of the Study Team. Meetings will be held at intervals to co-ordinate the overall study (eg: in association with the IAA Spring Meetings in Paris).*

Time Line: *It is proposed to complete the study within 2 years, ending in June 2009.*

Final Product (Report, Publication, etc.): *A Final Report, which will be published by a recognised publisher, such as the AIAA, BIS, Praxis/Springer, etc. It is likely that conference and journal papers will also be written using this material.*

Target Community:

- i. That part of the scientific community who wish to study in situ the interaction between the solar system and the interstellar medium, and also the physical properties of that medium.*
- ii. Funding agencies who may be interested in mounting missions of this kind.*

Support Needed: *Experts from the IAA to carry out the required peer review of the Final Report.*

Potential Sponsors: *Possible publishers.*

To be returned to IAA Secretariat Paris fax: 33 1 47 23 82 16 email: sgeneral@iaonet.org

Date: *25 March 2007* **Signature:**

For IAA Use Only:

Update: Contributors

New contributors: Wolfgang Seboldt, DLR
Solar sails

Claudio Maccone, AleniaSpace
Focal mission; TLC; Science

Roman Kezerashvili (CUNY)
Solar sails

Kelvin Long (in contact with G. Matloff)

Present contributors also include C. Bruno, G. Matloff, G. Vulpetti, L. Johnson.
Contributions expected from R. Lenard, A. Hansson and K. Long

Status

So far: contributions **received** from Matloff (solar sails and science), Bruno (NEP), Kezerashvili (solar sails), Maccone (TLC and FOCAL mission), Vulpetti (solar sails and science)

Grand total: **about 50 pages** of text, some very synthetic.
Could be expanded to maybe 70.

Greg has summary of work by Maccone, Kezerashvili and himself

Some unexpected results using NEP

Perspectives

Draft FR to be **ready by the Korea IAF** in October 2009 (with some effort)

Topic: some overlap with chapter by Frisbee in Millis & Davis 2009 AIAA book

Material covered **could be expanded** beyond a IAA Study: no other single reference available

Could become a book or special issue