

International Academy of Astronautics
6 rue Galilee, Po Box 1268-16, 75766 Paris Cedex 16, France
<http://www.iaaweb.org>

First IAA Symposium on
SEARCHING FOR
LIFE SIGNATURES



Nançay Decimetric Radio Telescope – Photo Credit Nançay RT.

Final Program

UNESCO, Paris, France,
September 22-26, 2008

Room III, 125 avenue de Suffren, 75007 Paris, Metro Cambronne

Web site : <http://iaaseti.org/searchingforlife.htm>



GDR Exobio

The First IAA Symposium on Searching for Life Signatures is organized by the International Academy of Astronautics (IAA) and is co-sponsored by “Observatoire de Paris” and its Center of Nançay.

Conference Rationale

SETI (the “Search for ExtraTerrestrial Intelligence”) refers to the experiments intended to find either radio or optical signals from extraterrestrial societies situated on planets around other stars. The largest radio telescopes world-wide have occasionally pursued SETI searches since 1960, in most cases hunting for signals near in frequency to 1420 MHz (the emission line of neutral hydrogen). Optical SETI searches have been pursued since the 1990s. These attempts to detect extraterrestrial signals are called “Passive SETI”.

In recent years, a new kind of SETI, called “Active SETI”, has been discussed by radio astronomers and has been attempted in a few cases: it consists of deliberately transmitting signals to enhance the probability of making contact with other hypothetical galactic technological civilizations. In addition, the discovery since 1995 of more than 200 extrasolar planets makes it clear that both Passive and



Active SETI may now be “targeted” towards exoplanets that are situated within habitable zones, further increasing the probability of a SETI success.

In conclusion, it is now timely to gather a large conference of experts in SETI, biosignatures, the search for terrestrial exoplanets and related disciplines from all over the globe to openly discuss the strategies of both Passive and Active SETI. These are the goals of the “Searching for Life Signatures” Conference that will take place at UNESCO in Paris, Sept 22 – 26, 2008, in the week prior to the International Astronautical Congress to be held in Glasgow.

Final Program

- Monday, Sept. 22: Morning: Registration and Opening Session.
Afternoon: Passive SETI.
Evening at 19:30: Public Outreach event with Jill Tarter (English language with French translation by André Brack). The title of Jill Tarter’s Lecture is: “Searching for ExtraTerrestrial Intelligence - Where We’ve Been and Where We are Going”. The Lecture will be given at the Lecture Theatre of the AeroClub de France, 6 Rue Galilee, Paris (Metro: Boissiere, No. 6 line, near the Etoile) (Organizer: Claudio Maccone).
- Tuesday, Sept. 23: Morning: Active SETI, Exoplanets from the Ground.
Afternoon: Exoplanets from Space, and Life.
Evening: Public Outreach event (French language only) with Stephane Dumas at the “science & technology town” of Les Ulis, 25 km south of Paris. (Organizer: Elisabeth Piotelat). Time: 19:30
- Wednesday, Sept. 24: Morning: Exoplanets, Astrophysics and SETI. Historical, Philosophical and Societal Aspects of SETI.
Afternoon: Detecting & Deciphering in SETI.
Evening at 18:30: Public Outreach Event entitled “Message vers les étoiles” with Anne Jaffrennou and Marie Cuisset (French language only): Auditorium de la Grande Galerie de l’Evolution, Museum national d’Histoire naturelle, 36, rue Geoffroy St. Hilaire, Paris. (Metro: Censier/Jussieu/Gare d’Austerlitz) (Organizer: Florence Raulin-Cerceau).
- Thursday, Sept. 25: Morning: At the Edge of Knowledge. Legal International Issues. General Debate for all the Attendees ONLY.
Afternoon: free.
Evening: Conference Dinner starts at 18:00 at the Restaurant ‘Le Bouillon Racine’, 3 rue Racine (Metro: Cluny – La Sorbonne, No. 10 line). Concert “Sing a Song of SETI”, slides and songs by H. Paul Shuch also known as Dr.SETI® (Organizers: Jean-Michel Contant and Jean Schneider).
- Friday, Sept. 26: 8 a.m.- 7 p.m. - Technical Visit to Nançay Observatory (3h by bus near Orléans) the grand decimetric radio telescope at which SETI searches were conducted in the 1980s and 1990s by Jill Tarter, François Biraud et al. (Organizer: Jean-Michel Martin).

TECHNICAL PROGRAM

-----8:15 – 9:00 Registration of Participants-----

Opening Ceremony

Monday Sept. 22, 09:00 - 09:30

Chair: J.-M. Contant, IAA, C. Maccone, IAA

Welcome to Participants

Maccone Claudio, Italy

Welcome Address

Egret Daniel, President of Observatoire de Paris, France

IAA and SETI: Fifty Years of Scientific Research and Tribute to Jean Heidmann

Contant Jean-Michel, France

Session 1 : Keynote Lectures

Monday Sept. 22, 9 :30 – 15 :30

Chair: J.-M. Contant, IAA, Paris, Claudio Maccone, IAA, Turin, Italy.

Discoveries of solar system analogues and super Earths

Queloz Didier, Switzerland

IAA-S8-0101 9:30 – 10:00

SETI: From Pioneering Research to Recent Achievements

Drake Frank D., USA

IAA-S8-0102 10:00 – 10:30

-----10:30 – 11:00 Coffee Break-----

The Allen Telescope Array: a better pitchfork for exploring the Cosmic Haystack

Tarter Jill, USA

IAA-S8-0103 11:00 – 11:30

Formation of Giant Planets, Super Earths and Habitable Planets

Boss Alan, USA

IAA-S8-0104 11:30 – 12:00

Future Exoplanet Detections from Space, and SETI

Leger Alain, France

IAA-S8-0105 12:00 – 12:30

Biosignatures on Exoplanets: beyond the standard views

Schneider Jean, France

IAA-S8-0106 12:30 – 13:00

-----13:00 – 14:30 Lunch Break-----

Extraterrestrial life: what are we looking for?

Brack André, France

IAA-S8-0107 14:30 – 15:00

European radio message: origin and concept

Zaitsev Alexander, Russia

IAA-S8-0108 15:00 – 15:30

Session 2: Passive SETI: Listening to Them

Monday Sept. 22, afternoon

Chair: Florence Raulin-Cerceau, Museum Histoire Naturelle, Paris

Rapporteur: Jean-Pierre Rospars, INRA, Versailles

New SETI sky survey for radio and optical pulses

Wertheimer Dan, USA

IAA-S8-0201 15:30 – 15:50

Project Argus Progress Report: T plus twelve years and holding

Shuch H. Paul, USA

IAA-S8-0202 15:50 – 16:10

-----16:10 – 16:30 Coffee Break-----

SETI Italia 2008: On-going Searches and Future Prospects

Montebugnoli Stelio, Monari Jader, Italy

IAA-S8-0203 16:30 – 16:50

Professional SETI in Australia to Restart <i>Oliver Carol, Australia</i>	IAA-S8-0205	16:50 – 17:10
The SETI Program in Korea <i>Rhee Myung-Hyun, Korea</i>	IAA-S8-0206	17:10 – 17:30
The new SETI in France <i>Martin Jean-Michel, France</i>	IAA-S8-0207	17:30 – 17:50

Session 3: Active SETI: Sending Messages to Them *Tues. Sept. 23, morning*
Chair: Alain Labeque, IAS, Orsay, France **Rapporteur: Paul Shuch, USA**

SETI: The Compact and the Controversy <i>Shostak Seth, USA</i>	IAA-S8-0301	9:00 – 9:20
Crypto analysis applied to Active SETI <i>Dumas Stephane, Dutil Yvan, Canada</i>	IAA-S8-0302	9:20 – 9:40
Active SETI: Scientific Experiment, Diplomatic Action or Artistic Expression? <i>Vakoch Doug, USA</i>	IAA-S8-0303	9:40 – 10:00
Active SETI and the Zoo hypothesis <i>Labeque Alain, France</i>	IAA-S8-0304	10:00 – 10:20
Active SETI and Its Possible Dangers: An Overview <i>Musso Paolo, Italy</i>	IAA-S8-0305	10:20 – 10:40
Overcome the Great Silence! <i>Zaitsev Alexander, Russia</i>	IAA-S8-0306	10:40 – 11:00

-----11:00 – 11:30 Coffee Break-----

Session 4: Exoplanets from the Ground *Tuesday Sept. 23, late morning*
Chair: Seth Shostak, SETI Institute, USA **Rapporteur: Alain Labeque, IAS, Orsay, France**

Timing of Stellar Brightness Periodic Variations as a Method of Earth-Like Planet Detection <i>Beskin Grigory, Russia</i>	IAA-S8-0401	11:30 – 11:50
Stars as semaphore light towers: Artificial transit and SETI <i>Arnold Luc, France</i>	IAA-S8-0402	11:50 – 12:10
Detection of Biomarkers using Infrared Spectroscopy <i>Dumas Stephane, Joncas G., Dutil Yvan, Canada</i>	IAA-S8-0403	12:10 – 12:30

-----12:30 – 14:30 Lunch Break-----

Session 5: Exoplanets from Space *Tuesday Sept. 23, afternoon*
Chair: Jill Tarter, SETI Institute, USA **Rapporteur: Alain Labeque, IAS, Orsay, France**

Searching for Inorganic Life in Universe <i>Tsyтович V. N, Russia, Morfill G. N., Germany</i>	IAA-S8-0501	14:30 – 14:50
Extended IRAS-based whole-sky upper limit on Dyson spheres and the implication for future Dyson spheres searches <i>Carrigan Dick, USA</i>	IAA-S8-0502	14:50 – 15:10
LUCAS Experiment: searching for vegetation and other biosignatures on planet Earth <i>Briot Danielle, France</i>	IAA-S8-0503	15:10 – 15:30
Super Earths and Life, and the role of NASA's Kepler Mission <i>Latham Dave, USA</i>	IAA-S8-0504	15:30 – 15:50
The diversity of low-mass exoplanets and the search for inhabited worlds <i>Selsis Franck, France</i>	IAA-S8-0505	15:50 – 16:10

-----16:10 – 16:40 Coffee Break-----

Session 6: Exoplanets and Life**Chair: Alexander Zaitsev, Russia****Tuesday, Sept. 23, late afternoon****Rapporteur: Alain Labeque, IAS, Orsay, France**

SETI in the light of Terrestrial Biological Evolution <i>Rospars Jean-Pierre, France</i>	IAA-S8-0601	16:40 – 17:00
Our search for extraterrestrial life may be modified considering the unique group of silicon-utilizing micro-organisms <i>Satadal Das, India</i>	IAA-S8-0602	17:00 – 17:20
Interstellar Organic Molecules: Evidence of prebiology or detritus of biology? <i>Wickramasinghe Chandra, UK</i>	IAA-S8-0603	17:20 – 17:40
Self-Assembly of Complex Systems: Artificial Living Cells? <i>Tamulis Arvydas, Lithuania</i>	IAA-S8-0604	17:40 – 18:00

Session 7: Exoplanets, Astrophysics and SETI**Chair: Douglas A. Vakoch, SETI Institute, USA****Weds. Sept. 24, morning****Rapporteur: Jean Schneider, Paris Observatory, France**

Galactic Habitable Zone <i>Prantzos Nikos, France</i>	IAA-S8-0701	9:20 – 9 :40
The Statistical Drake Equation <i>Maccone Claudio, Italy</i>	IAA-S8-0702	9:40 – 10:00
Two-laser system to transmit optical images to ET civilizations <i>Beskin Grigory et al., Russia</i>	IAA-S8-0703	10:00 – 10:20
Laser transition in atomic iodine for passive and active SETI <i>Kutaev Y. F., Mankevich S. K., Nosach O. Y., Orlov E. P., Russia</i>	IAA-S8-0704	10:20 – 10:40

-----10:40 – 11:00 Coffee Break-----

Session 8: Historical, Philosophical and Sociological Aspects of SETI**Chair: Jean-Michel Martin, Paris Observatory, France****Weds. Sept. 24, late morning****Rapporteur: Florence Raulin-Cerceau, Museum National d'Histoire Naturelle, Paris**

Historical review of the first interplanetary communication attempts: a scientific and literary overview <i>Raulin-Cerceau Florence, France</i>	IAA-S8-0801	11:00 – 11:20
Evolution, history & SETI: Some philosophical observations <i>Lestel Dominique, France</i>	IAA-S8-0802	11:20 – 11:40
Unpacking the Great Transmission Debate <i>Denning Kathryn, Canada</i>	IAA-S8-0803	11:40 – 12:00
An Iconic Approach to Communicating Musical Concepts in Interstellar Messages <i>Vakoch Doug, USA, Maccone Claudio, Italy</i>	IAA-S8-0804	12:00 – 12:20
Interstellar Message Composition: Learning about ETs and ourselves through writings <i>Lockwood Jeffrey, USA</i>	IAA-S8-0805	12:20 – 12:40
What would a billion-year-old civilization look like? <i>Dumas, Stephane, Dutil Yvan, Canada</i>	IAA-S8-0806	12:40 – 13:00

-----13:00 – 14:30 Lunch Break-----

Session 9: Detecting & Deciphering in SETI**Weds. Sept. 24, late afternoon****Chair: Stephane Dumas, Canada Rapporteur: Nikos Prantzos, IAP, Paris**

Search for extraterrestrial civilizations in the optical range <i>Beskin Grigory et al., Russia</i>	IAA-S8-0901	14:30 – 14:50
Targets and SETI I – Shared Motivations and Active SETI <i>Edmondson William, UK</i>	IAA-S8-0902	14:50 – 15:10
Targets and SETI II – Strategic Issues and Passive SETI <i>Edmondson William, UK</i>	IAA-S8-0903	15:10 – 15:30
Detecting the Signature of Intelligent Life <i>Elliott John, UK</i>	IAA-S8-0904	15:30 – 15:50

-----15:50 – 16:10 Coffee Break-----

The KLT (Karhunen-Loève Transform) to extend SETI searches to broad-band and extremely feeble signals <i>Maccone Claudio, Italy</i>	IAA-S8-0905	16:10 – 16:30
Using Fractional Derivative as Degree of Symmetry to Characterize Natural Shapes <i>Ilhan Husrev T., Linscott Ivan, USA</i>	IAA-S8-0906	16:30 – 16:50
On the signature of LINCOS <i>Ollongren Alexander, The Netherlands</i>	IAA-S8-0907	16:50 – 17:10
The linguistic pre-requisites of SETI: a critical analysis of H. Freudenthal's book "LINCOS" <i>Schneider Jean, France</i>	IAA-S8-0908	17:10 – 17:30

Session 10: At the Edge of Knowledge**Thursday, Sept. 25, morning****Chair: Alexander Ollongren, Sweden Rapporteur: Pierre Colom, France**

Virtual Interstellar Cloning <i>Gardner James N., USA</i>	IAA-S8-1001	9:20 – 9:40
The lure of local SETI. Fifty years of field experiments <i>Ailleris Philippe, The Netherlands</i>	IAA-S8-1002	9:40 – 10:00
When SETI meets an alien form of intelligence: understanding the troubled relationships between SETI and ufology <i>Lagrange Pierre, France</i>	IAA-S8-1003	10:00 – 10:20
Investigation and analysis of transient luminous phenomena in the low atmosphere of Hessdalen valley, Norway <i>Hauge Bjorn Gitle, Norway</i>	IAA-S8-1004	10:20 – 10:50

-----10:50 – 11:20 Coffee Break-----

Revelation: the Timescale of ETI Signal Interpretation <i>Baxter Stephen, UK</i>	IAA-S8-1005	11:20 – 11:40
SETI meets a social intelligence: dolphins as a model for real-time interaction and communication with a sentient species <i>Herzing Denise L., USA</i>	IAA-S8-1006	11:40 – 12:00
Animal Communications, Information Theory and the Search for Extraterrestrial Intelligence <i>Doyle Laurance R., USA</i>	IAA-S8-1007	12:00 – 12:20

Session 11: Legal International Issues & SETI, Thurs. Sept. 25, late morning
Chair: Paul Shuch, USA, Rapporteur: Philippe Ailleris, The Netherlands.

**PAC: Protected Antipode Circle at the center of the Far Side of the Moon
for the Benefit of all Humankind**
Maccone Claudio, Italy

IAA-S8-1101 12:20 – 12:40

Technical Visit to Nançay Radio Telescope

Friday, Sept. 26, 08:00 - 19:00

Bus transportation / Train from UNESCO to Nançay Observatory (3h), the grand decimetric radio telescope at which SETI searches were conducted in the 1980s and 1990s by Jill Tarter, François Biraud *et al.* (advance registration required).