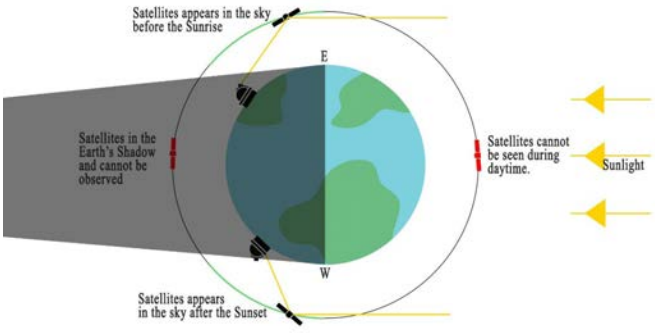
THE i4iS MEMBERS' PAGE

The i4is membership scheme exists for anyone who wants to help us achieve an interstellar future. By joining i4is, you help to fund our technical research and educational outreach projects. In return, members receive exclusive benefits, including our programme of talks, a newsletter and preprints, and access to the members-only area of the website, to which new material is added on a regular basis. If you aspire to an interstellar future for humanity, joining our membership scheme will allow you to get more involved while helping us take the vital early steps toward that goal.

Recent members' newsletters and preprints

Two editions of the members' newsletter have come out since the last issue of Principium. The first, issued on 14 May, included coverage of several recent developments of interstellar relevance, including:

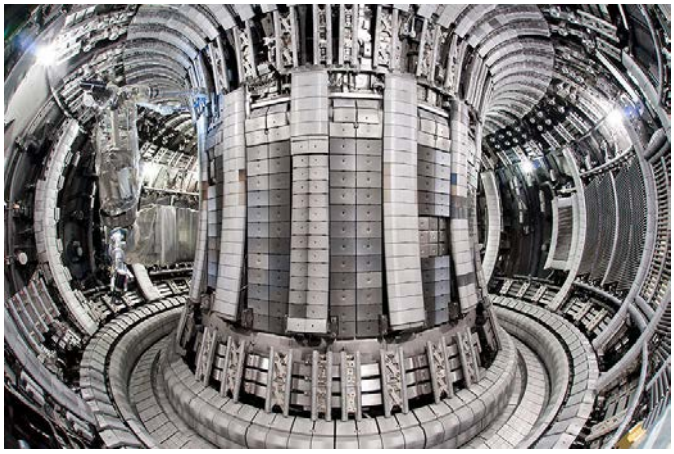
- record-breaking advances in fusion research from the Joint European Torus in Oxfordshire;
- two papers on laser sail design from the Breakthrough Starshot team;
- a paper on thermal-antimatter propulsion concepts;
- a study suggesting that advanced extraterrestrial civilisations might use 'free-floating' planets (ie those not orbiting a star) as a (slow) means of interstellar transportation; and
- a proposal to search old astronomical photographs of the near-Earth environment for historical evidence of non-terrestrial artefacts (such as extra-terrestrial space probes) - as in the diagram below.



From "A glint in the eye: photographic plate archive searches for non-terrestrial artefacts" Figure 1: Illumination of satellites. Satellites are only visible when the Sun illuminates them and the background sky is not too bright. The higher the altitude of the orbit, the longer the satellite is outside the shadow of the Earth.

The second newsletter, issued on 7 August, covered:

- A workshop on 'Fast, Low-Cost, Interplanetary Sailcraft Science Missions', organised in Luxembourg in mid-May by i4is Executive Director Andreas Hein (but in his role as Professor of Space Systems Engineering at the University of Luxembourg);
- A paper on von Neumann probes by long-time friend to i4is, Professor Greg Matloff;
- A paper on antimatter propulsion for exoplanet exploration by Gerald P Jackson, presenting a design capable of exceeding 2% of light speed; and
- A paper by Yiming Huo which discusses the development of an internet of deep-space probes, to enable planetary defence against such scenarios as an asteroid or comet impact with Earth.



The Joint European Torus tokamak reactor near Oxford, UK, is a test bed for the world's largest fusion experiment – ITER in France. Credit: Christopher Roux (CEA-IRFM)/EUROfusion (CC BY 4.0)

Three preprints of articles that will appear in Principium issue 38 have also been placed in the members' area on the website in the last three months:

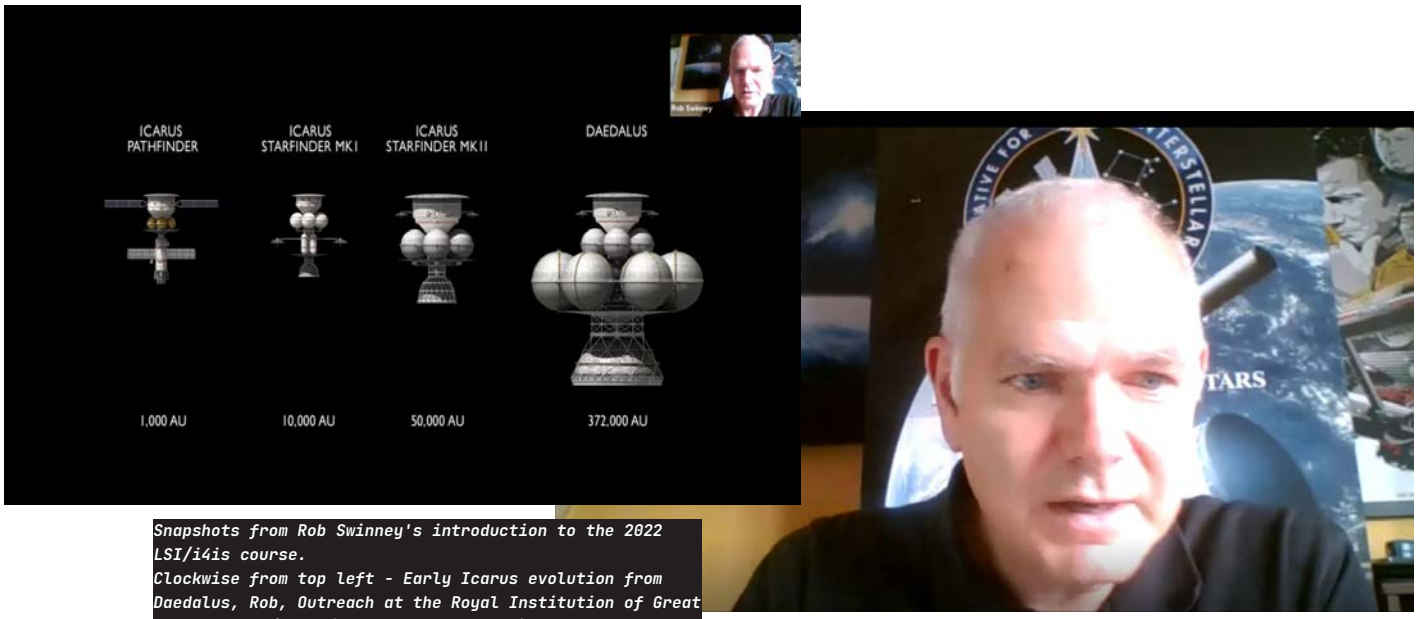
- Andreas Hein's review of a new book on astrobiology, 'Life in the Cosmos – From Biosignatures to Technosignatures', by Manasvi Lingam and Avi Loeb;
- The second part of John Davies' educational article on explaining the maths and physics of interstellar propulsion to secondary school students – this time focusing on the photon sail equation; and
- A summary of the interstellar-themed technical papers to be presented at the International Astronautical Congress in Paris in late September.

They all appear in this issue of Principium - but you saw them first!

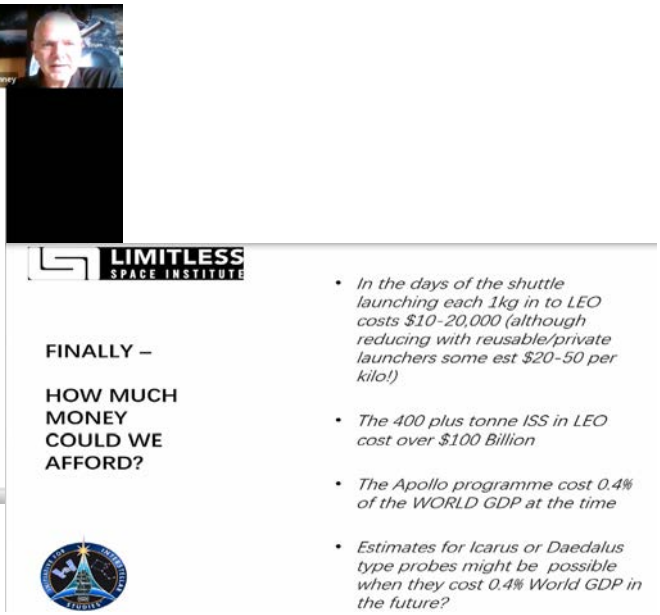
Limitless Space Institute summer course, July 2022: Human Exploration of the Far Solar System and on to the Stars

i4is delivered the summer course, 'Human Exploration of the Far Solar System and on to the Stars' for the Limitless Space Institute from 25 to 29 July 2022. This is the second year that we have presented these lectures. The course was well received by attendees once again. We expect to put videos of the lectures up on the members'-only area of the i4is website soon.

Here are a few snapshots from Rob Swinney's introductory lecture this year.



Snapshots from Rob Swinney's introduction to the 2022 LSI/i4is course.
Clockwise from top left - Early Icarus evolution from Daedalus, Rob, Outreach at the Royal Institution of Great Britain 2018/2019 (next in August 2022), How much can we afford for a mission?

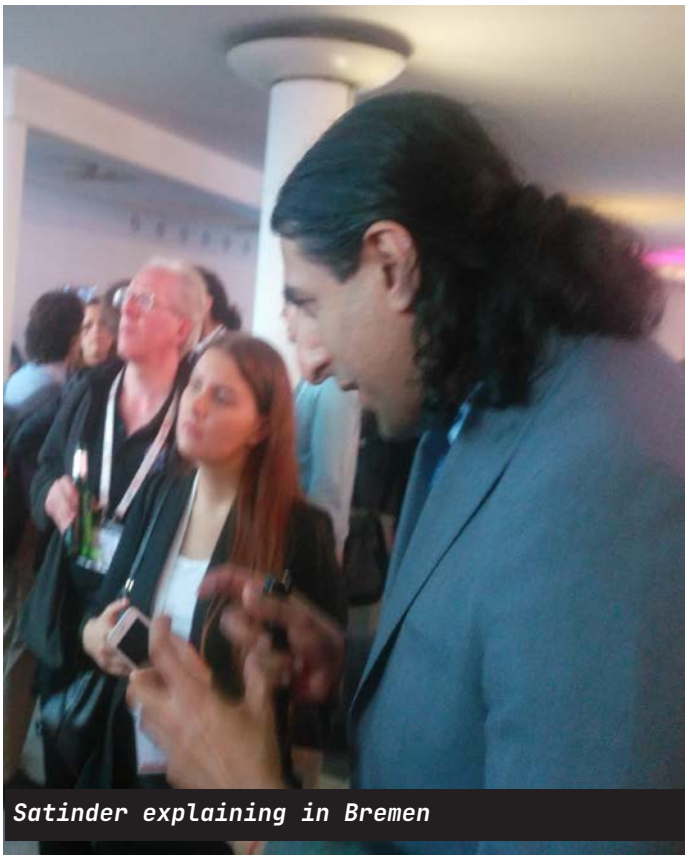


Getting more actively involved

If you'd like to go beyond your membership of i4is, and get involved with our work more actively, we'd love to hear from you! There are lots of different ways you can help us take our programmes forwards, whether your skills are technical, educational, administrative or financial.

Members of i4is who enjoy Science Fiction writing are being invited to contribute stories for an i4is SF anthology - check out the members newsletter or the website here: i4is.org/the-i4is-science-fiction-anthology/

And the the more volunteers we have, the more we can achieve! If you think you could volunteer some time, please get in touch at info@i4is.org, and one of us will get back to you as soon as possible.



Satinder explaining in Bremen

Tishtry and Anna at a BIS event

We would love to do more. We need more volunteers in Europe, Asia, Africa and the Americas.
We have material you can use or adapt from primary school to university and for professionals and enthusiasts in disciplines like Astronomy, Rocket engineering, Physics, Maths, English, Social sciences, Aviation and media - both popular and heavy!

Terry, John & Jeremy at a London school