

## Report on International Planetary Probe Workshop, 6-12 July 2019

Colin Wilson, IPPW-2019 LOC chair, 16 July 2019

The International Planetary Probe Workshop is an annual meeting which alternates between the USA and Europe (the first IPPW, in 2003, was hosted in Portugal). It was set up initially by ESA Huygens scientist Jean-Pierre Lebreton to exchange information between European and American counterparts, with a focus on bringing together scientists and engineers associated with planetary entry probe missions. Many of the sessions are quite technical, focussing on engineering aspects of the Entry, Descent and Landing (EDL) systems, but there is a deliberate aim to present also the scientific rationale both for measurements during EDL and the scientific rationale for the missions themselves. Further detail can be found at the meeting website, [www.ippw2019.uk](http://www.ippw2019.uk).

The 5-day Workshop itself (8-12 July) was preceded by a Short Course (6-7 July) entitled “Ice Giants: Exciting Targets for Solar System Entry Probes Exploration”. This course, aimed at early career scientists and engineers, gave an overview of the science and engineering of Uranus & Neptune entry probe missions.

### Participants:

A total of 240 people participated in IPPW 2019.

221 people participated in the workshop, and 69 attended the short course (many attended both).

### Nationality balance

The nationality breakdown was as follows:

IPPW SHORT COURSE PARTICIPATION				
Nation	# people	%		
US	43	62%	non-EU:	65%
CA	1	1%		
JP	1	1%		
GB	10	14%	EU:	35%
F	6	9%		
NL	5	7%		
D	2	3%		
E	1	1%		

IPPW WORKSHOP PARTICIPATION				
Nation	# people	%		
US	137	62%	non-EU:	66%
JP	5	2%		
CA	2	1%		
CN	1	0.5%		
GB	31	14%	EU:	34%
F	12	5%		
D	11	5%		
NL	11	5%		
E	3	1%		
B	2	1%		
CH	2	1%		
I	2	1%		
DK	1	0.5%		
PT	1	0.5%		

It can be seen that the majority of IPPW2019 participants are from the USA. This reflects, clearly, the funding of planetary entry probe missions. Nevertheless, hosting the IPPW in the Europe allowed excellent access for EU scientists to speak with the science and engineering teams of the NASA planetary probe missions, which is an important route for allowing EU scientists to interact with NASA’s planetary missions. To give two examples, the PI and project scientist of the recently selected Titan Dragonfly mission, and the project scientists of Cassini, were attending the meeting.

IPPW2019 was unsuccessful at attracting participation from EU inclusiveness countries, beyond one participant from Portugal; again, this reflects the low number of planetary probe missions currently funded in Europe and the dominance of established space nations in the activities which participate in them. Student registration prices were kept deliberately low, at £50 and £100 for short course and workshop registration, respectively, to keep the event accessible for low income countries. For future IPPW conferences we will consider increasing the bursary awarded to early career participants from €500 per participant to closer to €1000, to cover a larger proportion of travel and accommodation costs.

The event included participants also from China, Japan, and Canada. Panel discussion from NASA, ESA, UKSA and Chinese Academy of Sciences was organised for the first day of the conference.

### **Gender Balance**

55/221 of the workshop participants, and 17/69 of the short course participants were female, which is 25% in both cases. The new IPPW chair of the international organising committee and student organising committees are both female. IPPW 2019 held, for the first time in IPPW 2019's history, a Women's networking lunch. This was a wonderful opportunity for those new to the field to meet inspirational figures like Linda Spilker (Cassini Project Scientist) and Elizabeth Turtle (NASA Titan Dragonfly P.I.).

### **Academia / Industry balance**

We found that 32% of participants at the workshop came from universities; 56% came from national labs and space agencies including NASA, ESA, CNES and DLR; and the remaining 12% came from industry. The industrial participation from EU nations was particularly welcome and diverse, with companies from Portugal to Denmark.

### **Early Career participation**

At the short course, 30 out of 69 participants were registered as students (including also participants less than one year after the submission of their PhD).

At the workshop, 40 out of 221 participants were registered as students (including also participants less than one year after the submission of their PhD).

Functions aimed at students included a Student Social event on Sunday 7 July, and a Career Development lunch on Tue 9 July.

### **Europlanet support**

The IPPW community are very grateful to Europlanet for its support.

Europlanet have asked for a single receipt against which to pay expenses. Attached is the itemised catering bill from the University's internal catering service: this includes catering for coffee breaks, short course lunches, student career development lunch, women's networking lunch, and poster sessions.

Would you like us to issue a single invoice in regards to these costs, or a pair of invoices (e.g. addressed to FMI and University of Wales respectively). Please specify to whom these invoices should be issued.

