MW-Gaia WG1 Workshop

The Gaia Treasure Hunt

Cambridge (UK), 3rd-5th September 2019

To mark the beginning of the MW-Gaia COST Action, a three-day workshop The Gaia Treasure Hunt took place in Cambridge.

Scientific motivation of the workshop

The format was reviews and contributed talks, together with break-out sessions to tackle problems. The days are focussed around problems, in which we wanted to make progress during the meeting. The workshop was limited to a maximum of 45 participants.

Day One

The Galactic Bulge and Bar (Coordinator, Jason Sanders): What is the structure of the Galactic Bulge/Bar? What is the pattern speed? How do proper motions change our understanding of the X-shaped structure or the high velocity peaks? What is the role of ages and chemical data in the modelling?

The first morning was devoted to the structure of the Bulge and saw invited talks by Francesca Fragkoudi (Munich) and Christopher Wegg (Munich) as well as a contributed talk by Jason Sanders (Cambridge), who coordinated the session. Outstanding questions include the age and pattern speed of the bar, as well as its formation mechanism. In the afternoon, the discussion moved to the nearby disk, spiral structure and the local open clusters with contributions from Eugene Vasiliev (Cambridge) and Daisuke Kanata (MSSL).

Day two

The Galactic Disk (Coordinator, Justin Read): What is local dark matter density? How should the kinematics of the local disk be modelled? What is the origin of the phase space spiral (the Gaia snail)? What is the role of mergers? What are the mechanisms that drive the warp and bending modes in the disk?

The second day concentrated on the disk, and was organised by Justin Read (Surrey). It began with a stimulating invited talk by Misha Haywood (Paris) on how the thick disk, thin disk and the splash or plume stars are related.

Chervin Laporte (Victoria) gave an invited talk on how the Gaia phase space spiral may have been caused by the impact of the Sagittarius dwarf. A different viewpoint was advocated by Sergey Khoperskov (Munich), who attributed it to the epoch of bar formation and buckling. After lunch, the focus was on the local dark matter density, and how Gaia may pin this quantity down. It is of great importance in astroparticle physics,

and Axel Widmark (Stockholm) gave a nice talk on this. The day concluded with Anthony Brown of ESA giving an update on perspectives for Gaia Data Release 3.

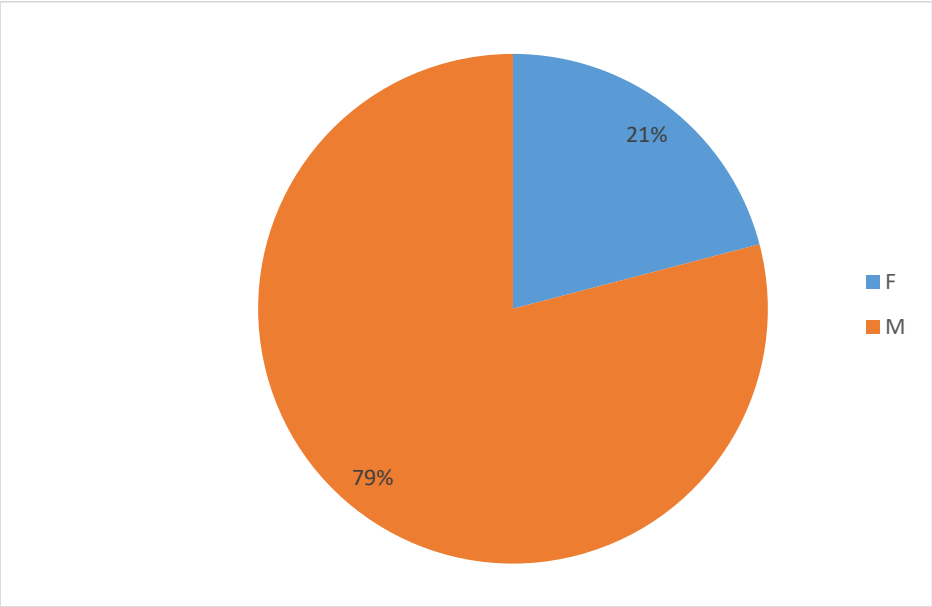
Day three

The Galactic Halo (Coordinator, Wyn Evans): What are the best statistical measures of substructure in configuration/phase space to describe the clustering in the stellar halo and disk? What physical processes are imprinted in the correlation functions? How should the data be compared to simulations? What is the mass of the Milky Way, and its escape speed?

The third day was organised by Wyn Evans (Cambridge) on the halo. Sergey Koposov (Carnegie-Mellon) and Lachlan Lancaster (Princeton) gave invited talks on how the structure in the halo may be analysed with modern astrostatistical techniques. Andrea Font (Liverpool) provided a perspective on how the in situ and accreted halo can be distinguished using numerical simulations. James Lane (Toronto) gave an interesting talk on how the shape of the dark halo may be measured using APOGEE stars. In the afternoon, the topic switched to the overall mass of the Milky Way with contributions from Marius Cautun (Leiden) and Denis Erkal (Surrey).

A particularly nice feature of the workshop was the very high standard of contributions from early stage researchers who gave some of the best talks.

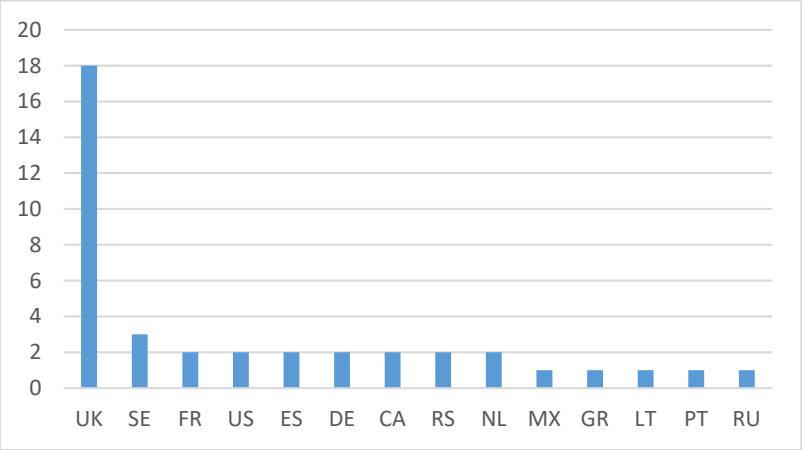
The workshop in numbers



The workshop was attended by 45 researchers, 21% of them female.

The SOC and LOC both had a 38% of female researchers (3 out of 8).

From the total, 28 participants (62%, including invited speakers) had financial support by the COST Action.



There were researchers from 14 different countries: Europe (mostly UK), the United States, Canada and Mexico.

There were 26 presentations. 44% of the female participants presented something while 35% of male participants did. There were 7 Invited talks (29% female) and19 Contributed talks (11% female).

Images:

https://en.wikipedia.org/wiki/Institute_of_Astronomy,_Cambridge#/media/File:IoA-Cambridge-Obs-Building.jpg

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Report prepared by Wyn Evans and Lola Balaguer-Núñez.