

Please note that all times are indicated in **CEST** (GMT+2). Participants will be able to connect 30 minutes before the scheduled start (i.e. at 14.30), if they so wish, so that they can socially interact.

**Workshop format:** Lorentz workshops focus much more on interaction among participants than about attending talks as in a regular conference. For this reason, all the contributions to the workshop (invited and contributed talks and posters) will be pre-recorded and uploaded two weeks before the workshop, although we will give the possibility to poster presenters to do “flash”, 1 minute presentations during the live sessions. For the success of the workshop we strongly encourage the participants to watch the uploaded contributions beforehand. The 5 live sessions of the workshop will take place from Monday 13th to Friday 17th between 15.00 and 18.30 CEST and will consist mainly in structured discussions about the “big questions” in the field, focusing on what we can now consider as “known” (for which the debate is essentially closed), what is believed to be true but a definitive evidence is still lacking, and what is still unknown and requires new steps in theory and/or observations to be elucidated. Each session will have two discussion leaders who, one week before the session, will upload a table on a shared document repository reporting the scientific issues that in their view fall in the “known”, “believed” and “unknown” categories. The participants are also encouraged to propose other issues. Such a table will stimulate the live debate. To allow all participants to intervene, the discussion will first be broken in small parallel sessions, then the views of each parallel session will be summarized in a plenary session, triggering a global final debate. The finalized tables (one per session) will remain as the main deliverable of the workshop and are intended to guide the future research of the community in the next 5 years. Some time for specific questions to the speakers is also allocated at the end of each day.

## Day 1

Monday 13<sup>th</sup> September

Topic: Disc evolution (disc surveys and comparison with evolution models)

Invited review talks: Stefano Facchini (ESO), Anna Miotello (ESO)

Contributed talks:

- Kees Dullemond (Heidelberg), Warped and broken disks: Origin, Dynamics and Radiative Transfer
- Inga Kamp (Groningen), An ALMA archival exploitation of Herbig Ae/Be protoplanetary disks: Outer radii measurements
- Benoit Tabone (Leiden), Disk evolution in the emerging paradigm of MHD disk-winds: revisiting disk demographics
- Marion Villenave (JPL), Probing extreme vertical settling of dust grains

Discussion leaders: Giovanni Rosotti (Leicester), Diana Powell (CfA)

15.00-15.15	Welcome by the Lorentz Center and workshop organisers
15.15-15.25	Summary of the talks
15.25-15.35	Flash talks given by poster presenters (1 minute each)
15.35-16.00	Introduction given by two discussion leaders
16.00-16.15	Coffee break
16.15-17.00	Discussions on the topics proposed by the discussion leaders in randomly allocated breakout sessions

17.00-18.00	Plenary discussion. Sharing and discussion of the results of the breakout sessions
18.00-18.30	Time set aside for individual discussions among participants on contributions (questions on talks, posters, ...)

## Day 2

Tuesday 14<sup>th</sup> September

Topic: Observations of sub-structures

Invited review talks: Jane Huang (Michigan), Catherine Walsh (Leeds)

Contributed talks:

- Jaehan Bae (Florida), Discovery of an infall stream around a protoplanetary disk
- Antonio Garufi (Arcetri), A census of sub-structures in high-contrast imaging
- Jozsef Varga (Leiden), Structure of the inner few au region of planet-forming disks from mid-infrared interferometry
- Alison Young (Leicester), Chemical signatures of warped protoplanetary discs

Discussion leaders: Feng Long (CfA), Myriam Benisty (IPAG Grenoble)

15.00-15.10	Welcome and recap of previous day
15.10-15.20	Summary of the talks
15.20-15.30	Flash talks given by poster presenters (1 minute each)
15.30-16.00	Introduction given by two discussion leaders
16.00-16.15	Coffee break
16.15-17.00	Discussions on the topics proposed by the discussion leaders in randomly allocated breakout sessions
17.00-18.00	Plenary discussion. Sharing and discussion of the results of the breakout sessions
18.00-18.30	Time set aside for individual discussions among participants on contributions (questions on talks, posters, ...)

## Day 3

Wednesday 15<sup>th</sup> September

Topic: Planet hunting in discs

Invited review talks: Christian Ginski (Amsterdam), Christophe Pinte (Monash)

Contributed talks:

- Ruobing Dong (Victoria), Deciphering observed structures in protoplanetary disks
- Giuseppe Lodato (Milan), Using gas kinematics to measure disc and planet masses with ALMA
- Michael Meyer (Michigan), Gas Giant Planet Formation versus Stellar Mass: The Role of Circumstellar Disk Evolution

- Jessica Speedie (Victoria), Detectability of planet-driven spiral arms in the dust component of protoplanetary disks with ALMA

Discussion leaders: Ruobing Dong (Victoria), Jaehan Bae (Carnegie DTM)

15.00-15.10	Welcome and recap of previous day
15.10-15.20	Summary of the talks
15.20-15.30	Flash talks given by poster presenters (1 minute each)
15.30-16.00	Introduction given by two discussion leaders
16.00-16.15	Coffee break
16.15-17.00	Discussions on the topics proposed by the discussion leaders in randomly allocated breakout sessions
17.00-18.00	Plenary discussion. Sharing and discussion of the results of the breakout sessions
18.00-18.30	Time set aside for individual discussions among participants on contributions (questions on talks, posters, ...)

## Day 4

Thursday 16<sup>th</sup> September

Topic: Non-planet related origin of sub-structures (MHD, snow lines, ...)

Invited review talks: Geoffroy Lesur (IPAG Grenoble), Ke (Coco) Zhang (Wisconsin)

Contributed talks:

- Xuening Bai (Tsinghua University), Dust dynamics and planetesimal formation in turbulent protoplanetary disks and dust rings
- Ryosuke Tominaga (RIKEN), Toward Understanding Planetesimal Formation in Protoplanetary Disks I: A Bridge between Dust Growth and Ring-Forming Instabilities
- Sanemichi Takahashi (NAOJ), Toward Understanding Planetesimal Formation in Protoplanetary Disks II: Secular Gravitational Instability as a Mechanism for Creating Multiple Rings

Discussion leaders: Carsten Dominik (Amsterdam), Xuening Bai (Tsinghua University)

15.00-15.10	Welcome and recap of previous day
15.10-15.20	Summary of the talks
15.20-15.30	Flash talks given by poster presenters (1 minute each)
15.30-16.00	Introduction given by two discussion leaders
16.00-16.15	Coffee break
16.15-17.00	Discussions on the topics proposed by the discussion leaders in randomly allocated breakout sessions
17.00-18.00	Plenary discussion. Sharing and discussion of the results of the breakout sessions
18.00-18.30	Time set aside for individual discussions among participants on contributions (questions on talks, posters, ...)

# Day 5

Friday 17<sup>th</sup> September

Topic: Planet and planetesimal formation theories

Invited review talks: Hubert Klahr (MPIA Heidelberg), Michiel Lambrechts (Lund)

Contributed talks:

- Myriam Benisty (IPAG Grenoble), Recent observational results on PDS70 (CPD, gas kinematics etc.)
- Bertram Bitsch (MPIA Heidelberg), How pebble evaporation shapes giant planets
- Ake Nordlund (Copenhagen), Rapid formation of rocky planets by chondrule accretion
- Andrew Winter (Heidelberg), Interpreting the exoplanet population with respect to the planet-forming disc: the consequences of dynamical perturbation

Discussion leaders: Alessandro Morbidelli (CNRS), Joanna Drażkowska (LMU Munich)

15.00-15.10	Welcome and recap of previous day
15.10-15.20	Summary of the talks
15.20-15.30	Flash talks given by poster presenters (1 minute each)
15.30-16.00	Introduction given by two discussion leaders
16.00-16.15	Coffee break
16.15-17.00	Discussions on the topics proposed by the discussion leaders in randomly allocated breakout sessions
17.00-18.00	Plenary discussion. Sharing and discussion of the results of the breakout sessions
18.00-18.30	Time set aside for individual discussions among participants on contributions (questions on talks, posters, ...)