

## POST MEETING REPORT FORM

Deadline for Submission: within 1 month after the meeting

The chair of the SOC of any IAU scientific meeting is responsible for preparing the <u>Post</u> <u>Meeting Report</u> using the standard form available on-line within 1 month after the Meeting. The proposal must include a written commitment to abide by this requirement.

(i) Final scientific programme, list of invited review speakers and session chairs, to be published in the IAU website

Final scientific programme — see the attached file

Session Chairs — 2/9 (female/male) Invited speakers — 3/14 (female/male) Contributed talks — 24/68 (female/male)

## **Session Chairs**

- D. Bisikalo M
- T. Hanawa M
- C. Boily M
- S. Mohamed F
- G. Mellema M
- E. Katsavounidis M
- D. Ryu M
- T. Hanawa M
- S. Portegies Zwart M
- D. Wiebe M
- M. Fujii F

## **Invited speakers**

R. Klessen M T. Takiwaki M M. Vogelsberger M R. Weiss M L. Kewley F A. Brown M N. Pogorelov M A. Lecavelier des Etangs M P. Hennebelle M V. Bromm M A. Pillepich F A. Ines Gomez de Castro F F. Yuan M M. Shibata M A. Mezzacappa M A. Kosovichev M S. Rosswog M

(ii) Summary of the scientific highlights of the meeting (1 page, to be published on the IAU website)

The primary goal of the IAU Symposium 362 "Predictive Power of Computational Astrophysics as a Discovery Tool" was to summarize the current state of various computational techniques and their results in a wide range of astronomical topics. The broad subjects of the symposium have been stated as strong gravity, large-scale structure, galaxy formation and evolution, star formation and the interstellar medium, stellar evolution, Solar & exo-planet systems, and new computational tools and data mining, but there were many talks that went beyond this general structure. The symposium scientific program consisted of 17 invited talks, 95 contributed talks, and 23 poster presentations. We also had a session of poster introduction in which each presenter introduced their posters by two-minutes pre-recorded videos.

One of the invited talks was given by the Nobel Prize winner Reiner Weiss. It was devoted to gravitational wave astronomy, which is not only one of the most significant developments in modern astronomy, but also a major computational achievement. Gaia recent results were the subject of another invited talk, given by A. Brown. The talk explored the challenges that large data sets, like the Gaia archive, present to the computational astrophysics field, both from data mining/analysis and modelling point of view. In some invited talks various aspects of the interstellar medium (ISM) physics and star formation studies have been considered at various scales, from large-scale ISM modelling (L. Kewley), galaxy formation modelling (M. Vogelsberger) and initial mass function (P. Hennebelle) to small-scale phenomena and individual objects, like T Tauri stars (Gomez de Castro), the heliosphere and local interstellar medium (N. Pogorelov), or exocomets (A. Lecavelier des Etangs). Of special importance are issues related to coupling between theoretical predictions and observational results (R. Klessen). An invited talk by V. Bromm was devoted to the formation of first stars. A significant attention was paid to modelling of various extreme events, like neutron star mergers (M Shibata), supernova explosions (T. Takiwaki, A. Mezzacappa), outflows from accretion disks around black holes (F. Yuan), general aspects of relativistic fluid modelling (S. Rosswog). On the opposite side, global cosmological simulations were the subject of A. Pillepich invited talks. Finally, A. Kosovichev presented the current state of the Sun modelling, which has not just scientific, but also practical significance, given our reliance on electronic devices that sensitively depend on the solar activity.

The subject range of contributed talks was, of course, even wider. Participants presented new and upgraded computational tools, discussed new methods of data analysis related to machine learning. There were talks devoted to cosmology, stellar structures, magnetic fields, star formation at various scales and epochs, and even astrobiology. All the talks have been recorded and presented to the Symposium participants, who had missed them due to time zone differences or other reasons.

(v) An Executive Summary of the Meeting (1-2 pages) to be published on the IAU website.

Computational astrophysics rapidly becomes an indispensable tool for data-handling and making scientific discoveries in astronomy. A spectacular example is the precise calculation of gravitational wave forms coupled with sophisticated algorithms for signal analysis, together enabling a reliable gravitational wave detection. The main objective of this Symposium was to capitalize on these and other exciting advances. Our intention was to bring together both top scientists and students in a broad variety of research fields to summarize major achievements and outstanding challenges from theory and observations.

The initial plan was to hold a meeting in France, in June 2020. For obvious reasons we first had to postpone the Symposium until 2021, and then we decided to make it a fully online event in November 2021. Still, this has not prevented us from having a diverse and fruitful meeting. We have considered various options for organizing this event, including available commercial solutions, and finally decided that a professional Zoom account (kindly provided by the IAU) in combination with a dedicated Slack working space would fit all our needs. That proved to be a viable solution. We also offered a WonderMe space for private discussions.

The list of registered participants is just over 200 and consists of representatives from 35 countries, with two most significant delegations from the USA and Russia. While online meetings do have some disadvantages, the total participant number far exceeds the number of participants that had registered for the initial dates. Online format has allowed the Symposium to be attended by people from underrepresented countries, which would otherwise have not been able to participate.

The scientific program of the Symposium was quite extended with 17 invited talks, 95 contributed talks, and 23 posters, and consisted of whole-day sessions. As we had to take time zones into account, it was impossible to organize truly topical sessions, but we still succeeded in keeping some subject organization, while respecting speakers' comfort. Two technical support teams from Japan and Russia provided Zoom and Slack functioning, distribution of links, time keeping etc.

Overall, the symposium was very inspiring and, hopefully, useful. All the presented talks were quite informative. Of course, some of them raised lots of questions, but it is a normal situation in science, and it does not mean that they are not interesting. The symposium participants were of very different levels, from students to a Nobel prize winner. The range of topics was also very broad, therefore the SOC spent a lot of time trying to combine wideness and deepness. Finally, we managed to reach a good combination of reviews and contributed talks that gave us both an extensive introduction to main topics and the highest level of specific studies.

The IAU Commission B1 organizing committee was the main engine of the conference, and we hope that its old and new members will continue this hard job. The symposium is now over, but the work continues. The next step is to prepare and publish the Symposium proceedings.

		um 362 Scientific F all times @ GMT+1h (Eur	-	
Day 1 (Monday 8 November )				
Time	Speaker id	Institute	Title	
Session 1 (C	hair:D. Bisikalo)			
08:45–09:00	Zoom starts			
09:00–09:15	Dmitry Bisikalo	Russian Aca. of Sci.	Opening remark / technical announcements	
09:15—09:45	1_Ralf Klessen (I)	ITA, Heidelberg	Predicting diagnostic emission lines in star-forming regions Linking numerical modeling to multi- wavelength observations	
09:45—10:00	2_Jeongbhin Seo	Pusan National University	A New Code for Relativistic Hydrodynamics and its Application to FR II Radio Jets	
10:00-10:15	3_Alexander Wagner	University of Tsukuba	Probing jet-ISM interactions and the physics of AGN feedback in the radio galaxy IC 5063 with source-tailored hydrodynamic simulations	
10.15–10.30	4_Keiya Hirashima	University of Tokyo	Predicting the expansion of supernova shell for high-resolution galaxy simulations using deep learning	
10.30–10.45	5_Yu Qiu	Kavli Inst. for Astron. & Astroph., Peking	Dynamics and Morphology of Cold Gas in Fast, Radiatively Cooling Outflows: Constraining AGN Energetics with Horseshoes	
10.45–11.00	6_Mahavir Sharma	Indian Institute of Technology, Bhilai	Nature of star formation in first galaxies	
11.00–11.15	Break			
Session 2 (C	Chair : T. Hanawa)			
11.15–11.45	7_Tomoya Takiwaki (I)	NAO, Japan	Dynamics of rotating or magnetized core-collapse supernovae	
11.45–12.00	8_Peter Berczik	Main Astron. Observa- tory, NAS of Ukraine	NGC6240: Triple supermassive black holes in simulation and observation. Kozai-Lidov Effect and the timescale of PN merging	

11.45–12.00	8_Peter Berczik	tory, NAS of Ukraine	Kozai-Lidov Effect and the timescale of PN merging
12.00–12.15	9_Anastasiia Topchieva	INASAN	Search for Galaxy Cluster Candidates using a convolutional neural network based on the method of tracing the Sunyaev-Zeldovich effect
12.15–12.30	10_Daria Dobrycheva	Main Astron. Observa- tory, NAS of Ukraine	The CNN classification of galaxies by their image morphological peculiarities
12.30–12.45	11_Aurore Betranhandy	Stockholm University	The impact of axions in 2D CCSNe simulations while varying the coupling constant
12.45–13.00	12_Mariana Panayotova	Inst. of Astronomy, Bulgarian Acad. of Sci.	Favoured Inflationary Models by SFC Baryogenesis
13.00–13.15	13_lurii Babyk	Main Astron. Observa- tory, NASU of Ukraine	Optical and X-ray observations of NGC3081
13.15–13.45	Open discussion		
	Luncl	n break / evening bre	eak
Session 3 (0	Chair : C. Boily)		
15.00–15.30	14_Mark Vogelsberger (I)	міт	Simulating Galaxy Formation: high and low redshifts
15.30–15.45	15_Enrico Garaldi	Max-Planck-Institut fuer astrophysik	Towards a complete picture of early structure formation using the Thesan radiation-magneto-hydrodynamics cosmological simulations
15.45–16.00	16_Folkert Nobels	Leiden Observatory	Simulating the multiphase gas cycle in galaxy groups and clusters
16.00–16.15	17_Pierre Ocvirk	University of Strasbourg	Cosmic Dawn III: the latest and largest radiation-hydrodynamical simulation of the Epoch of Reionization
16.15–16.30	18_Sophie Koudmani	University of Cambridge	Black Hole Feedback in New Regimes: Modelling Dwarf Galaxies with Active Galactic Nuclei
16.30–16.45	19_Moritz Fischer	University of Hamburg	Simulations of dark matter with frequent self-interactions
16.45-17:00	20_Simon Selg	Hamburg Observatory, Universität Hamburg	Studying Magnetic Field Amplification in Simulations of Interacting Galaxies
17:00-17:15	Break		
17.15–17.45	21_Rainer Weiss (I)	міт	The beginnings of gravitational wave astronomy: current state and future
17.45–18.00	22_Virginia d'Emilio	Cardiff University	Density estimation with Gaussian Processes for gravitational waves
18.00–18.15	23_Ashkbiz Danehkar	University of Michigan	Hydrodynamic Simulations and Time- dependent Photoionization Modeling of Starburst-driven Superwinds
18.15–18.30	24_Greco Peña	Universidad de Valparaíso	The effect of primordial tomographic non-Gaussianity on structure formation
18.30–18.45	25_lleyk El Mellah	IPAG - CNRS	Hybrid magnetic structures around spinning black holes connected to a surrounding accretion disk
18.45–19.00	General discussion		
	Open discussion or	n WonderMe, Slack	/ end of day 1

		um 362 Scientific H all times @ GMT+1h (Eur	•
	Day 2	(Tuesday 9 Novem	nber)
Time	Speaker	Institute	Title
Session 4 (	Chair : S. Mohamed)		
08.45–09.00	Zoom starts		
09.00–09.30	27_Lisa Kewley (I)	ASTRO 3D Australian National University	Theoretical modelling of the interstella medium
09.30–09.45	28_Shyam Menon	Australian National University	Modelling Radiation Hydrodynamics in the FLASH Adaptive-Mesh Refinement (AMR) code
09.45–10.00	29_Ayan Bhattacharjee	UNIST	Could There Be a Unified Spectral Mode for Black Holes and Neutron Stars?
10.00–10.15	30_Alessandro Trani	The University of Tokyo	TSUNAMI: a fast and accurate regularized code for black hole and planetary dynamics
10.15–10.30	31_Antonios Katsianis	TD. Lee Institute, Shanghai	A critical view on the SFRs derived in observations and cosmological simulations. Problem(s) in Paradise and the Elephant(s) in the room
10.30–10.45	32_Tetsuro Asano	University of Tokyo	Velocity-space substructures and bar resonances in an N-body Milky Way
10.45–11.00	33_Bhusan Kayastha	NAO, Chinese Academy of Sciences	Realistic Models of Globular Clusters using N-Body Simulations
11:00-11:15	Break		
Session 5 (	Chair : G. Mellema)		
11.15–11.45	34_Anthony Brown (I)	Leiden Observatory	Gaia data as a playground for computational astrophysics
11.45–12.00	35_Radhika Achikanath Chirakkara	Australian National University	Efficient highly-subsonic turbulent dynamo and growth of primordial magnetic fields
12.00–12.15	36_Debasish Mondal	University of Calcutta, India	Role of galactic bars in the formation of spiral arms: a study through orbital and escape dynamics-I
12.15–12.30	37_Gourab Giri	Indian Inst. of Techno., Indore	Numerical modelling of peculiar winged sources having X- and S-shaped morphology
12.30–12.45	38_Michela Mapelli	University of Padova	A new computational approach to binary black hole formation
	1		

INAF-OAS, Bologna

Chaotic Cold Accretion onto Black Holes

39\_Massimo Gaspari

12.45–13.00

13.00-13.15       40_Marco Dal Alfico       University of Padova       exchanged system?         13.15-13.45       General discussion       Lunch break / evening break         Lunch break / evening break         Session 6 (Chairs : E. Katsavounidis / C. Boily *tbc)         15.00-15.30       41_Nikolai Pogorelov (I)       University of Alabama in Huntsville       The Heliosphere in the Local Interstell Medium         15.30-15.45       42_Bart Ripperda       Princeton Uni. & Flatiron Inst.       Black hole flares: ejection of accreted magnetic flux through 3D plasmoid- mediated reconnection         15.45-16.00       43_Raoul Canameras       MPA Garching       University of Helsinki         16.00-16.15       44_Margarita Sobolenko       Main Astron. Observa- tory NAS, Ukraine       Merging of spinning binary black holes cosmological simulations         16.30-16.45       45_Peter Johansson       University of Helsinki       Resolving the complex dynamical evolution of supermassive black holes cosmological simulations         16.30-16.45       46_Simon Portegies Zwart       Leiden Observatory       Lyapunov time dependence of N and ti influence of general relativity         16.45-17.00       47_Steven Rieder       Université de Genève       Simulating star cluster formation in galaxies         17.45-18.00       49_Hui Li       Columbia University       Enhancing the formation of massive sta clusters in galaxy mergers				
Lunch break / evening break         Session 6 (Chairs : E. Katsavounidis / C. Boily *tbc)         15.00–15.30       41_Nikolai Pogorelov (I)       University of Alabama in Huntsville       The Heliosphere in the Local Interstell Medium         15.30–15.45       42_Bart Ripperda       Princeton Uni. & Flatiron Inst.       Black hole flares: ejection of accreted magnetic flux through 3D plasmoid- mediated reconnection         15.45–16.00       43_Raoul Canameras       MPA Garching       Black hole flares: ejection of accreted magnetic flux through 3D plasmoid- mediated reconnection         16.05–16.15       44_Margarita Sobolenko       Main Astron. Observa- tory NAS, Ukraine       Merging of spinning binary black holes in globular clusters         16.15–16.30       45_Peter Johansson       University of Helsinki Zwart       Vapunov time dependence of N and ti influence of general relativity         16.45–17.00       47_Steven Rieder       Université de Genève       Simulating star cluster formation in galaxies         17.45–17.45       48_Alain Lecavelier des Etangs (I)       IAP, Paris       Transit light curves of exocomets         17.45–18.00       49_Hui Li       Columbia University       Enhancing the formation of massive stu clusters in galaxy mergers         18.10–18.15       50_Jessica Birky       University of Washington       Active Learning for Accelerated Bayesiti inference (ALABI)         18.15–18.30       51_Tsang Keu	13.00–13.15	40_Marco Dall'Amico	University of Padova	GW190521: second generation binary or exchanged system?
Session 6 (Chairs : E. Katsavounidis / C. Boily *tbc)15.00–15.3041_Nikolai Pogorelov (I)University of Alabama in HuntsvilleThe Heliosphere in the Local Interstell Medium15.30–15.4542_Bart RipperdaPrinceton Uni. & Flatiron Inst.Black hole fares: ejection of accreted magnetic flux through 3D plasmoid- mediated reconnection utentifying strong gravitational lenses i current and future large-scale imaging surveys16.00–16.1544_Margarita SobolenkoMain Astron. Observa- tory NAS, UkraineMerging of spinning binary black holes in globular clusters16.15–16.3045_Peter JohanssonUniversity of HelsinkiResolving the complex dynamical evolution of supermassive black holes cosmological simulations16.30–16.4546_Simon Portegies ZwartLeiden ObservatoryLyapuro time dependence of <i>N</i> and th galaxies17.45–17.0047_Steven RiederUniversité de GenèveSimulating star cluster formation in galaxies17.45–18.0049_Hui LiColumbia UniversityEnhancing the formation of massive sta clusters in galaxy mergers18.00–18.1550_Jessica BirkyUniversity of WashingtonActive Learning for Accelerated Bayesia Inference (ALABI)18.30–18.4552_Dongwook LeeUC Santa CruzGP-MOOD: A positive-preserving high- order finite volume method for hyperbolic conservation laws18.45–19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as an alternative symbiotic channel to millisecond pulsars	13.15–13.45	General discussion		
15.00–15.3041_Nikolai Pogorelov (I) HuntsvilleUniversity of Alabama in HuntsvilleThe Heliosphere in the Local Interstell Medium15.30–15.4542_Bart RipperdaPrinceton Uni. & Flatiron Inst.Black hole flares: ejection of accreted magnetic flux through 3D plasmoid- mediated reconnection15.45–16.0043_Raoul CanamerasMPA Garchingurrent and future large-scale imaging surveys16.00–16.1544_Margarita SobolenkoMain Astron. Observa- tory NAS, UkraineMerging of spinning binary black holes in globular clusters16.15–16.3045_Peter JohanssonUniversity of HelsinkiResolving the complex dynamical evolution of supermasive black holes cosmological simulations16.30–16.4546_Simon Portegies ZwartLeiden ObservatoryLyapunov time dependence of N and ti influence of general relativity16.45–17.0047_Steven RiederUniversité de GenèveSimulating star cluster formation in galaxies17.45–18.0049_Hui LiColumbia UniversityEnhancing the formation of massive star clusters in galaxy mergers18.00–18.1550_Jessica BirkyUniversity of 		Lunch	break / evening b	reak
13.00-13.3041_Nikolal Pogorelov (1) HuntsvilleHuntsvilleMedium15.30-15.4542_Bart RipperdaPrinceton Uni. & Flatiron Inst.Black hole flares: ejection of accreted magnetic flux through 3D plasmoid- mediated reconnection15.45-16.0043_Raoul CanamerasMPA GarchingIdentifying strong gravitational lenses i current and future large-scale imaging surveys16.00-16.1544_Margarita SobolenkoMain Astron. Observa- tory NAS, UkraineIregring of spinning binary black holes in globular clusters16.15-16.3045_Peter JohanssonUniversity of HelsinkiResolving the complex dynamical evolution of supermassive black holes cosmological simulations16.30-16.4526_Simon Portegies ZwartLeiden ObservatoryLyapunov time dependence of N and ti influence of general relativity16.45-17.0047_Steven RiederUniversité de GenèveSimulating star cluster formation in galaxies17.45-18.0049_Hui LiColumbia UniversityEnhancing the formation of massive sta clusters in galaxy mergers18.00-18.1550_Jessica BirkyUniversity of WashingtonActive Learning for Accelerated Bayesia Inference (ALABI)18.15-18.3051_Tsang Keung ChanDurham UniversityGP-MOOD: A positive-preserving high- order finite volume method for hydrodynamics18.30-18.4552_Dongwook LeeUC Santa CruzGP-MOOD: A positive-preserving high- order finite volume method for hydrodynamics18.45-19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as an alternative symbiotic	Session 6 (0	Chairs : E. Katsavoun	idis / C. Boily *tbc)	
15.30–15.45       42_Bart Ripperda       Princeton Unit. & Flatiron Inst.       magnetic flux through 3D plasmoid-mediated reconnection         15.45–16.00       43_Raoul Canameras       MPA Garching       current and future large-scale imaging surveys         16.00–16.15       44_Margarita Sobolenko       Main Astron. Observatory NAS, Ukraine       Merging of spinning binary black holes in globular clusters         16.15–16.30       45_Peter Johansson       University of Helsinki       Resolving the complex dynamical evolution of supermassive black holes cosmological simulations         16.30–16.45       26_Simon Portegies Zwart       Leiden Observatory       Lyapunov time dependence of N and thinfluence of general relativity         16.45–17.00       47_Steven Rieder       Université de Genève       Simulating star cluster formation in galaxies         17.10–17:15       Break       Transit light curves of exocomets         17.45–18.00       49_Hui Li       Columbia University       Enhancing the formation of massive starts in glaxy mergers         18.00–18.15       50_Jessica Birky       University of Washington       Active Learning for Accelerated Bayesia inference (ALBI)         18.15–18.30       \$1_Tsang Keung Chan       Durham University       Simulating the clumpy intergalactic medium during reionization with a nov particle-based two moment radiation hydrodynamics         18.30–18.45       \$2_Dongwook Lee       UC Santa Cruz       GP-M	15.00–15.30	41_Nikolai Pogorelov (I)		The Heliosphere in the Local Interstellar Medium
15.45-16.0043_Raoul CanamerasMPA Garchingcurrent and future large-scale imaging surveys16.00-16.1544_Margarita SobolenkoMain Astron. Observa: tory NAS, UkraineMerging of spinning binary black holes inglobular clusters16.15-16.3045_Peter JohanssonUniversity of HelsinkiResolving the complex dynamical 	15.30–15.45	42_Bart Ripperda		magnetic flux through 3D plasmoid- mediated reconnection
16.00-16.1544_Margarita Sobolenkotory NAS, Ukrainein globular clusters16.15-16.3045_Peter JohanssonUniversity of HelsinkiResolving the complex dynamical evolution of supermassive black holes cosmological simulations16.30-16.4546_Simon Portegies ZwartLeiden ObservatoryLyapunov time dependence of N and ti 	15.45–16.00	43_Raoul Canameras	MPA Garching	current and future large-scale imaging
16.15–16.3045_Peter JohanssonUniversity of Helsinkievolution of supermassive black holes cosmological simulations16.30–16.4546_Simon Portegies ZwartLeiden ObservatoryLyapunov time dependence of N and tl influence of general relativity16.45–17.0047_Steven RiederUniversité de GenèveSimulating star cluster formation in galaxies17.00-17:15BreakIAP, ParisTransit light curves of exocomets17.45–17.4548_Alain Lecavelier des Etangs (I)IAP, ParisTransit light curves of exocomets17.45–18.0049_Hui LiColumbia UniversityEnhancing the formation of massive sta clusters in galaxy mergers18.00–18.1550_Jessica BirkyUniversity of WashingtonActive Learning for Accelerated Bayesia Inference (ALABI)18.15–18.3051_Tsang Keung ChanDurham UniversitySimulating the clumpy intergalactic medium during reionization with a nov particle-based two moment radiation hydrodynamics18.30–18.4552_Dongwook LeeUC Santa CruzGP-MOOD: A positive-preserving high- order finite volume method for hyperbolic conservation laws18.45–19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as an alternative symbiotic channel to millisecond pulsars	16.00–16.15	44_Margarita Sobolenko		Merging of spinning binary black holes in globular clusters
16.30–16.45ZwartLeiden Observatoryinfluence of general relativity16.45–17.0047_Steven RiederUniversité de GenèveSimulating star cluster formation in galaxies17.00-17:15BreakIAP, ParisTransit light curves of exocomets17.15–17.4548_Alain Lecavelier des Etangs (I)IAP, ParisTransit light curves of exocomets17.45–18.0049_Hui LiColumbia UniversityEnhancing the formation of massive sta clusters in galaxy mergers18.00–18.1550_Jessica BirkyUniversity of WashingtonActive Learning for Accelerated Bayesia Inference (ALABI)18.15–18.3051_Tsang Keung ChanDurham UniversitySimulating the clumpy intergalactic medium during reionization with a nov particle-based two moment radiation hydrodynamics18.30–18.4552_Dongwook LeeUC Santa CruzGP-MOOD: A positive-preserving high- order finite volume method for hyperbolic conservation laws18.45–19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as an alternative symbiotic channel to millisecond pulsars	16.15–16.30	45_Peter Johansson	University of Helsinki	evolution of supermassive black holes in
10.45–17.00       47_Steven Rieder       Universite de Geneve       galaxies         17:00-17:15       Break       IAP, Paris       Transit light curves of exocomets         17.15–17.45       48_Alain Lecavelier des Etangs (I)       IAP, Paris       Transit light curves of exocomets         17.45–18.00       49_Hui Li       Columbia University       Enhancing the formation of massive states         18.00–18.15       50_Jessica Birky       University of Washington       Active Learning for Accelerated Bayesia         18.15–18.30       51_Tsang Keung Chan       Durham University       Simulating the clumpy intergalactic medium during reionization with a nov particle-based two moment radiation hydrodynamics         18.30–18.45       52_Dongwook Lee       UC Santa Cruz       GP-MOOD: A positive-preserving high-order finite volume method for hyperbolic conservation laws         18.45–19.00       53_Ali Taani       Al Balqa Applied University       Accretion induced collapse of white dwarfs as an alternative symbiotic channel to millisecond pulsars	16.30–16.45		Leiden Observatory	Lyapunov time dependence of <i>N</i> and the influence of general relativity
17.15-17.4548_Alain Lecavelier des Etangs (I)IAP, ParisTransit light curves of exocomets17.45-18.0049_Hui LiColumbia UniversityEnhancing the formation of massive stat clusters in galaxy mergers18.00-18.1550_Jessica BirkyUniversity of WashingtonActive Learning for Accelerated Bayesia Inference (ALABI)18.15-18.3051_Tsang Keung ChanDurham UniversitySimulating the clumpy intergalactic medium during reionization with a nov particle-based two moment radiation hydrodynamics18.30-18.4552_Dongwook LeeUC Santa CruzGP-MOOD: A positive-preserving high- order finite volume method for hyperbolic conservation laws18.45-19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as an alternative symbiotic channel to millisecond pulsars	16.45–17.00	47_Steven Rieder	Université de Genève	-
17.15-17.45Etangs (i)IAP, ParisTransit light curves of exocomets17.45-18.0049_Hui LiColumbia UniversityEnhancing the formation of massive sta clusters in galaxy mergers18.00-18.1550_Jessica BirkyUniversity of WashingtonActive Learning for Accelerated Bayesia Inference (ALABI)18.15-18.3051_Tsang Keung ChanDurham UniversitySimulating the clumpy intergalactic medium during reionization with a nov particle-based two moment radiation hydrodynamics18.30-18.4552_Dongwook LeeUC Santa CruzGP-MOOD: A positive-preserving high- order finite volume method for hyperbolic conservation laws18.45-19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as an alternative symbiotic channel to millisecond pulsars	17:00-17:15	Break		
17.45–18.0049_Hul LiColumbia Universityclusters in galaxy mergers18.00–18.1550_Jessica BirkyUniversity of WashingtonActive Learning for Accelerated Bayesia Inference (ALABI)18.15–18.3051_Tsang Keung ChanDurham UniversitySimulating the clumpy intergalactic medium during reionization with a nov particle-based two moment radiation hydrodynamics18.30–18.4552_Dongwook LeeUC Santa CruzGP-MOOD: A positive-preserving high- order finite volume method for hyperbolic conservation laws18.45–19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as an alternative symbiotic channel to millisecond pulsars	17.15–17.45		IAP, Paris	Transit light curves of exocomets
18.00-18.1330_Jessica BirkyWashingtonInference (ALABI)18.15-18.3051_Tsang Keung ChanDurham UniversitySimulating the clumpy intergalactic medium during reionization with a nov particle-based two moment radiation hydrodynamics18.30-18.4552_Dongwook LeeUC Santa CruzGP-MOOD: A positive-preserving high- order finite volume method for hyperbolic conservation laws18.45-19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as an alternative symbiotic channel to millisecond pulsars	17.45–18.00	49_Hui Li	Columbia University	Enhancing the formation of massive star clusters in galaxy mergers
18.15–18.3051_Tsang Keung ChanDurham Universitymedium during reionization with a nov particle-based two moment radiation hydrodynamics18.30–18.4552_Dongwook LeeUC Santa CruzGP-MOOD: A positive-preserving high- order finite volume method for hyperbolic conservation laws18.45–19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as an alternative symbiotic channel to millisecond pulsars	18.00–18.15	50_Jessica Birky		Active Learning for Accelerated Bayesian Inference (ALABI)
18.30–18.4552_Dongwook LeeUC Santa Cruzorder finite volume method for hyperbolic conservation laws18.45–19.0053_Ali TaaniAl Balqa Applied UniversityAccretion induced collapse of white dwarfs as 	18.15–18.30	51_Tsang Keung Chan	Durham University	medium during reionization with a novel particle-based two moment radiation
18.45–19.00       53_Ali Taani       Al Balqa Applied University       dwarfs as an alternative symbiotic channel to millisecond pulsars	18.30–18.45	52_Dongwook Lee	UC Santa Cruz	
Open discussion on WonderMe, Slack / end of day 2	18.45–19.00	53_Ali Taani		dwarfs as an alternative symbiotic channel to
		Open discussion	on WonderMe, Slac	ck / end of day 2

		um 362 Scientific H all times @ GMT+1h (Eur	-
	Day 3 (W	/ednesday 10 Nov	ember)
Time	Speaker	Institute	Title
Session 7 (	Chair : D. Ryu)		
08.45–09.00	Zoom session starts		
09.00–09.30	54_Patrick Hennebelle (I)	CEA	What sets the typical mass of stars?
09.30–09.45	55_Kazutaka Kimura	Kyoto University, Yukawa Institute	Feedback from the Vicinity of Massive Protostars in the First Star Formation
09.45–10.00	56_Yuya Sakurai	Kavli IPMU	Evolution of rapidly accreting protostars and the formation of supermassive star with various metallicities
10.00–10.15	57_Tomoyuki Hanawa	Chiba University	Episodic accretion onto a young protostar
10.15–10.30	58_Ayano Komaki	The University of Tokyo	Radiation Hydrodynamics Simulations of Protoplanetary Disks
10.30–10.45	59_Miikka Väisälä	Academia Sinica Inst. of Astron. & Astroph.	Exploring magnetic spirals with radiativ transfer tool Perspective
10.45–11.00	60_Wang Huijuan	NAO, Chinese Academy of Sciences	High resolution spectroscopic research of young solar-type stars
11:00-11:15	Break		
11.15–13.15	Poster session		21 posters 2 min each + poster discussion; see a list of <u>posters here</u> .
	Lunch	break / evening b	reak
Session 8	(Chairs : C. Boily / E.	Audit)	
14.55–15.00	Conference picture		
15.00–15.30	61_Volker Bromm (I)	University of Texas at Austin	The First Stars: Ab-initio Structure Formation from Cosmological Initial Conditions
15.30–15.45	62_Stefano Torniamenti	University of Padova	A novel generative method for star clusters from hydro-dynamical simulations
15.45–16.00	63_Benedetta Casavecchia	Alma Mater Studiorum, University of Bologna	Absorption spectra from galactic wind models: a framework to link PLUTO simulations to TRIDENT
16.00–16.15	64_Anne Hutter	Kapteyn Astronomical Inst., Groningen	Astraeus: a framework to simulate early galaxies and reionization
16.15–16.30	65_Manos Zapartas	University of Geneva	Binary population synthesis with POSYDON: a next-generation code that employs detailed stellar structure and binary evolution calculation

			bindly evolution calculation
16.30–16.45	66_Thavisha Dharmawardena	Max Planck Insitute for Astronomy	Deriving the 3D structure of the Milky Way: A fast and scalable Gaussian Process applied to nearby star-formation regions
16.45–17.00	67_Mayeul Arminjon	Grenoble-Alpes University, INP, CNRS	Spectral energy density in a galaxy: predictions of a model of the interstellar radiation field as an exact Maxwell field
17:00-17:15	Break		
17.15–17.45	68_Annalisa Pillepich (I)	MPIA Heidelberg	Universe(s) in a box: insights from galaxy formation simulations like IllustrisTNG and steps forward
17.45–18.00	69_Mike Grudic	Carnegie Observatory	The dynamics of star formation in GMCs a view from STARFORGE
18.00–18.15	70_Joss Bland-Hawthorn	University of Sydney	Galactic seismology: the power of predictive Galactic dynamical models
18.15–18.30	71_Taichi Igarashi	Chiba University	Radiation Magnetohydrodynamic Simulations of Soft X-ray Emitting Regions in Active Galactic Nuclei
18.30–18.45	72_David Guszejnov	University of Texas at Austin	Effects of the environment and feedback physics on the initial mass function of stars
18.45–19.00	73_Henry Lane	Northwestern Uni. & Pennsbury High Sch.	Less wrong: a more realistic initial condition for simulations of turbulent molecular clouds

	(I) = invited talk ; all times @ GMT+1h (Europe winter time) Day 4 (Thursday 11 November)			
Time	Speaker	Institute	Title	
Session 9 (	Chair : T. Hanawa / S.	Portogios Zwart)		
08.45-09.00	Zoom session starts			
09.00–09.30	74_Ana Ines Gomez de Castro (I)	Uni. Complutense de Madrid	T Tauri stars: the physics of accretion engines — simulations versus observations	
09.30–09.45	75_Yurina Nakazato	The University of Tokyo	The formation of Supersonically Induced Gas Objects (SIGOs) with H2 cooling	
09.45–10.00	76_Michiko Fujii	The University of Tokyo	The formation of the Orion Nebula Cluster	
10.00–10.15	77_Sayan Kundu	Indian Institute of Technology, Indore	Numerical modeling and physical interplay of stochastic turbulent acceleration	
10.15–10.30	78_Thomas Rometsch	University of Tübingen	Detecting Vortices in Hydro-Simulation data using Computer Vision	
10.30–10.45	79_Maryna Ishchenko	Main astron. Observa- tory, NAS of Ukraine	Dynamical evolution modelling of the Collinder 135 & UBC 7 binary star cluste	
10.45–11.00	80_Khyati Malhan	MPIA, Heidelberg	The Global Dynamical Atlas of Milky Way mergers: Processing ESA/Gaia data with state-of-the-art software	
11:00-11:15	Break			
11.15–11.45	81_Feng Yuan (I)	Shanghai Astronomical Observatory	Outflows from black hole hot accretion flows	
11.45–12.00	82_Arghyadeep Paul	Indian Institute of Technology Indore	Explosive Magnetic reconnection and Particle Acceleration in High Lundquist Number Systems	
12.00–12.15	83_Maria S. Kirsanova	Inst. of Astronomy, Russian Acad. of Sci.	Infrared appearance of wind-blown bubbles around young massive stars	
12.15–12.30	84_Jonathan Mackey	Dublin Institute for Advanced Studies	PION: simulations of wind-blown nebulae	
12.30–12.45	85_Gwenael Van Looveren	University of Vienna	PRESTALINE: a package for analysis and simulation of star forming regions Theoretical model predictions as	
12.45–13.00	86_Andri Prozesky	University of South Africa	diagnostic tool for atomic hydrogen recombination maser sites	
13.00–13.15 <b>13:15-13:45</b>	87_Wladimir Banda- Barragan	Hamburg University	A cloud-cloud collision in Sgr B2? 3D simulations meet SiO observations	
13:15-13:45		Open discussion		
	Lunch	n break / evening b	reak	
Session 10		S. Portegies Zwart *tb		
15.00–15.30	88_Masaru Shibata (I)	Max Planck Inst. for Gravitational Physics	Self-consistent picture of neutron-star mergers based on longterm numerical simulation	
15.30–15.45	89_Pavel Kaygorodov	Institute of Astronomy, Russian Acad. of Sci.	Numerical modeling of a hot Jupiter with elliptical orbit	
15.45–16.00	90_Valery Shematovich	Institute of Astronomy, RAS	Kinetic modeling of auroral events at solar and extrasolar planets	
16.00–16.15	91_Martijn Wilhelm	Leiden Observatory	Modeling protoplanetary disk evolution in young star forming regions	
16.15–16.30	92_Maksym Vasylenko	Main Astron. Observa- tory, NAS of Ukraine	Applying the machine learning procedures for exocomet hunting in the TESS database	
16.30–16.45	93_Andrey Sobolev	Inst. of astronomy, Russian Acad. of Sci.	Drift of hot spots in the synchronous polar V808 Aur	
			Performance Portable Astrophysical	
16.45–17.00	94_Philipp Grete	University of Hamburg	Simulations: Challenges and Successes with K-Athena (MHD) and AthenaPK/ Parthenon (AMR)	
	94_Philipp Grete Break	University of Hamburg	with K-Athena (MHD) and AthenaPK/	
17:00-17:15		University of Hamburg University of University of Tennessee	with K-Athena (MHD) and AthenaPK/	
17:00-17:15 17.15–17.45	Break 95_Anthony	University of	with K-Athena (MHD) and AthenaPK/ Parthenon (AMR) Computational Necessity and Discover in Core Collapse Supernovae	
<b>17:00-17:15</b> <b>17.15–17.45</b> 17.45–18.00	Break 95_Anthony Mezzacappa (I) 96_Pierfrancesco Di	University of Tennessee Enrico Fermi Research	with K-Athena (MHD) and AthenaPK/ Parthenon (AMR) Computational Necessity and Discover in Core Collapse Supernovae Introducing MPCDSS: a new tool for the simulation of dense stellar systems	
<b>17:00-17:15</b> <b>17.15–17.45</b> 17.45–18.00 18.00–18.15	Break 95_Anthony Mezzacappa (I) 96_Pierfrancesco Di Cintio	University of Tennessee Enrico Fermi Research Center & INFN Konkoly Astronomical	with K-Athena (MHD) and AthenaPK/ Parthenon (AMR) Computational Necessity and Discover in Core Collapse Supernovae Introducing MPCDSS: a new tool for the simulation of dense stellar systems Moon formation in the circumplanetary	
16.45–17.00 <b>17:00-17:15</b> <b>17.15–17.45</b> 17.45–18.00 18.00–18.15 18.15–18.30 18.30–18.45	Break         95_Anthony         Mezzacappa (I)         96_Pierfrancesco Di         Cintio         97_Zoltan Dencs	University of Tennessee Enrico Fermi Research Center & INFN Konkoly Astronomical Institute, CSFK Western Sydney	with K-Athena (MHD) and AthenaPK/ Parthenon (AMR) Computational Necessity and Discover in Core Collapse Supernovae Introducing MPCDSS: a new tool for the simulation of dense stellar systems Moon formation in the circumplanetary habitable zone	

		um 362 Scientific F	•	
(I) = invited talk ; all times @ GMT+1h (Europe winter time)				
Time	Day 5 Speaker	5 (Friday 12 Novem	Der)	
	(Chairs : M. Fujii / D.		nue	
08.45-09.00	Zoom session starts			
09.00–09.30	101_Alexander Kosovichev (I)	New Jersey Institute of Technology	Advances and Challenges in Global-Sun Modeling	
09.30–09.45	102_Hiroto Mitani	University of Tokyo	Stellar wind effects on the atmospheric escape and transit signals of hot Jupiters	
09.45–10.00	103_Hsien Shang	ASIAA	Visualizing formation of molecular outflows	
10.00–10.15	104_Shanwlee Sow Mondal	Physical Research Lab., Ahmedabad	Particle acceleration and its consequences in ICME shocks	
10.15–10.30	105_Prateek Mayank	Indian Institute of Technology, Indore	Physics-based Algorithm for Solar Wind using Adaptive Numerical Framework	
10.30–10.45	106_Egor Illarionov	Moscow State University	Parametrization of sunspot groups using machine-learning approach	
10.45–11.00	107_Rony Keppens	CmPA, KU Leuven	Magnetohydrodynamic spectroscopy of the solar atmosphere: is thermal instability unavoidable?	
11:00-11:15	Break			
11.15–11.45	108_Stephan Rosswog (I)	Stockholm University	Modelling relativistic fluids with particles	
11.45–12.00	109_Suzan Dogan	University of Ege, Izmir	Hydrodynamical Simulations of Misaligned Accretion Discs in Binary Systems: Companions tear discs	
12.00–12.15	110-Sergey Khaibrakhmanov	Ural Federal & Chelyabinsk State Uni.	Numerical 2D MHD simulations of the collapse of magnetic rotating protostellar clouds with the Enlil code	
12.15–12.30	111_Eduard Vorobyov	Vienna & Southern Federal University	FEOSAD - modeling the formation and long-term evolution of protoplanetary disks	
12.30–12.45	112_Chia-Yu Hu	Max Planck Inst. for Extraterrestrial Physics	Metallicity dependence of the XCO factor in a multiphase interstellar medium	
12.45–13.00	113_Diego Calderón	Charles University, Prague	Moving-mesh radiation-hydrodynamic simulations of wind-reprocessed transients	
13.00–13.15	114_Iryna Vavilova	Main Astron. Observa- tory, NAS of Ukraine	Zone of Avoidance: Restoring with GAN technique	
13.15–13.30				
	Open discussio	n / Closing remarks	/ end of day 5	