



TAYSUN KIMM

Assistant professor
Department of Astronomy
Yonsei University

CONTACT

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DUTIES

- Department colloquium organizer
2017/09
- Member of BK21+ Institute of Earth, Atmosphere, Astronomy
2019/07
- Astro Poster Jamboree organizer
2019/02
- In charge of department website and computing policies
2019/03
- In charge of AstroNet (undergrad club)
2018/07
- In charge of Astro United (undergrad club)
2018/07

POSITION

YONSEI UNIVERSITY

Department of Astronomy

2017.09 - present
Assistant professor

UNIVERSITY OF CAMBRIDGE

Institute of Astronomy & Kavli Institute

2015.09 - 2017.07
Postdoctoral position with Prof. Martin **Haehnelt**

PRINCETON UNIVERSITY

Department of Astrophysical Sciences

2012.12 - 2015.08
Postdoctoral position with Dr. Renyue **Cen**

EDUCATION

UNIVERSITY OF OXFORD: DOCTOR OF PHILOSOPHY (ASTROPHYSICS)

2009.10 - 2012.09
Thesis: On the importance of feedback in the stream-fed high redshift universe
Supervisors: Profs. Julien **Devriendt** & Adrienne **Slyz**
Clarendon scholar (<http://www.ox.ac.uk/clarendon>)

YONSEI UNIVERSITY: MASTER OF SCIENCE (ASTRONOMY)

2007.03 - 2009.02
Thesis: A new semi-analytic prescription on the gas stripping during galaxy merger
Supervisor: Prof. Sukyoung Ken **Yi**

YONSEI UNIVERSITY: BACHELOR OF SCIENCE

2001.03 - 2007.02
Magna cum Laude, with honor in Astronomy

RESEARCH INTERESTS

Stellar feedback mechanisms (supernova, radiation pressure, Ly α pressure, etc)
 Evolution of star-forming clouds and development of galactic outflows
 Propagation of ionizing and non-ionizing radiation in galaxies
 Reionization of the Universe and the relative role of dwarf galaxies and quasars
 Emergence of strong emission lines (e.g. [OIII] and Ly α lines)
 Formation of globular clusters in the early universe
 Angular momentum transport and cold filamentary accretion
 RAM pressure stripping and satellite quenching phenomenon

TK

REFERENCES

PROF. DEVRIENDT, JULIEN

University of Oxford
Denys Wilkinson Building,
Oxford, OX1 3RH, UK

PROF. HAEHNELT, MARTIN

University of Cambridge
Institute of Astronomy, Madingley
Road, Cambridge, CB3 0HA, UK

DR. CEN, RENYUE

Princeton University
Peyton Hall, 4 Ivy Lane,
Princeton, NJ 08544, USA

PROF. PICHON, CHRISTOPHE

Institut d'astrophysique de Paris
98 bis boulevard Arago
F-75014, Paris, France

PROF. YI, SUKYOUNG

Yonsei University
50 Yonsei-ro, Seodaemun-gu,
Seoul, 03722, South Korea

PROF. SLYZ, ADRIANNE

University of Oxford
Denys Wilkinson Building,
Oxford, OX1 3RH, UK

SPOKEN

■ English 70% 

■ Korean 80% 

ACADEMIC SERVICES

Proposal review

National Science Foundation
DiRAC Computing time allocation committee
K-GMT Science Program committee

Referee

MNRAS, ApJ (2012-present)

RESEARCH GRANT

Evolution of galaxies at high redshift using RHD simulations
(Yonsei University, PI: Taysun Kimm, 2017-2019, ~\$100k)

Evolution of early dwarf galaxies and reionization of the Universe
(NRF Korea, PI: Taysun Kimm, 2018-2020, ~\$80k)

Center for Galaxy Evolution Research
(NRF Korea, PI: Young-Wook Lee ~\$3B, 2017-2020, Co-I: Taysun Kimm, ~\$120k)

CPU TIME

PRACE	2018-2019	54 Mh (CoI)	The first luminous objects and reionisation with SPHINX
KISTI	2018-2019	20 Mh (PI)	Formation of globular clusters in the universe
DIRAC-II	2018-2020	30 Mh (Co-PI)	Modelling galaxy baryon physics: from cosmological to sub-galactic scales
PRACE	2017-2018	14 Mh (Co-PI)	The first luminous objects and reionisation
DIRAC-II	2017-2019	5 Mh (PI)	Origin of strong outflows in star-forming galaxies
DIRAC-II	2017-2018	48 Mh (CoI)	Hydrodynamic simulations of cosmic structure formation at KICC: from first light to fully grown galaxies and the most massive clusters today

TECHNICAL SKILLS

Programming
Science Package

Fortran, IDL, MPI, OpenMP
RAMSES, ENZO, MUSIC, MPgraphic, SUNRISE, HealPIX, Vapor

STUDENT SUPERVISION

Supervision of a PhD student at Yonsei (**Daniel Han**) on the formation of globular clusters via cloud-cloud collision (2018-present)

Co-supervision of a PhD project at Yonsei (**Chongsam Na**) on the impact of radiation-modulated cooling on stellar feedback (2018 - present)

Supervision of a master student at Yonsei (**DoWoon Lee**) on the origin of Leo ring structure and tidal dwarf galaxies (2018 - present)

Supervision of a master student at Yonsei (**Suhyeon Choe**) on the emergence of strong emission lines from simulated clouds (2018 - present)

Supervision of a master student at Yonsei (**Taehwa Yoo**) on the origin of low escape fractions in massive star-forming galaxies at high redshift (2018 - present)

Co-supervision of a Part III MAST student (**Patrick Roddy**) at the University of Cambridge on a project to look at Lyman alpha profiles of simulated galaxies (2017)

Mentor of a PhD student (**Harley Katz**) at the University of Cambridge, co-supervising the computational part of his project on the variable speed of light approximation in RHD and molecular hydrogen formation (2015 - 2017)

Co-supervision of a summer student (**Morgan Presley**) at Princeton University on a project to look at molecular line formation (2013)

WORKSHOP ORGANISING

Date	Title	No. of Participants	Location
2019/06	Workshop on Numerical Modeling of Galaxy Formation and Evolution	~40 (Korea, France, US, Iceland)	Yonsei University
2019/01	Galaxy Formation Workshop	~30 (Korea)	Yonsei University
2018/11	Mini-workshop on galaxy evolution	~30 (Korea, France)	Yonsei University
2018/05	Yonsei-Oxford Galaxy Evolution Symposium	~50 (Korea, UK, France)	Yonsei University

JOURNAL PAPERS

33. Costa, Tiago; Rosdahl, Joakim; **Kimm, Taysun**; 2019, MNRAS, 489, 5181, [The hidden satellites of massive galaxies and quasars at high redshift](#)

32. Park, Min-Jung; Yi, Sukyoung K.; Dubois, Yohan; Pichon, Christophe; **Kimm, Taysun**; Devriendt, Julien; Choi, Hoseung; Volonteri, Marta; Kaviraj, Sugata; Peirani, Sebastien; 2019, ApJ, 883, 25, [New Horizon: On the origin of the stellar disk and spheroid of field galaxies](#)

31. Katz, Harley; Galligan, Thomas P.; **Kimm, Taysun**; Rosdahl, Joakim; Haehnelt, Martin G.; Blaizot, Jeremy; Devriendt, Julien; Slyz, Adrienne; Laporte, Nicolas; Ellis, Richard; 2019, MNRAS, 487, 5902, [Probing Cosmic Dawn with Emission Lines: Predicting Infrared and Nebular Line Emission for ALMA and JWST](#)

30. **Kimm, Taysun**; Blaizot, Jérémy; Garel, Thibault; Michel-Dansac, Léo; Katz, Harley; Rosdahl, Joakim; Verhamme, Anne; Haehnelt, Martin, 2019, MNRAS, 486, 2215, [Understanding the escape of LyC and Ly \$\alpha\$ photons from turbulent clouds](#)

29. Katz, Harley; Martin-Alvarez, Sergio; Devriendt, Julien; Slyz, Adrienne; **Kimm, Taysun**; 2019, MNRAS, 483, 1029, [Magnetogenesis at Cosmic Dawn: tracing the origins of cosmic magnetic fields](#)

28. Katz, Harley; **Kimm, Taysun**; Haehnelt, Martin G.; Sijacki, Debora; Rosdahl, Joakim; Blaizot, Jeremy; 2019, MNRAS, 484, 2620, [Tracing the sources of reionization in cosmological radiation hydrodynamics simulations](#)
27. Jung, Seoyoung L.; Choi, Hoseung; Wong, O. I.; **Kimm, Taysun**; Chung, Aeree; Yi, Sukyoung K.; 2018, ApJ, 865, 156, [On the Origin of Gas-poor Galaxies in Galaxy Clusters Using Cosmological Hydrodynamic Simulations](#)
26. Rosdahl, Joakim; Katz, Harley; Blaizot, J r my; **Kimm, Taysun**; Michel-Dansac, L o; Garel, Thibault; Haehnelt, Martin; Ocvirk, Pierre; Teyssier, Romain; 2018, MNRAS, 479, 994, [The SPHINX cosmological simulations of the first billion years: the impact of binary stars on reionization](#)
25. Katz, Harley; **Kimm, Taysun**; Haehnelt, Martin; Sijacki, Debora; Rosdahl, Joakim; Blaizot, Jeremy; 2018, MNRAS, 478, 4986, [A Census of the LyC photons that form the UV background during reionization](#)
24. Vangioni, Elisabeth; Dvorkin, Irina; Olive, Keith A.; Dubois, Yohan; Molaro, Paolo; Petitjean, Patrick; Silk, Joe; **Kimm, Taysun**; MNRAS, 477, 56, [Cosmological evolution of the nitrogen abundance](#)
23. **Kimm, Taysun**; Haehnelt, Martin; Blaizot, J r my; Katz, Harley; Michel-Dansac, L o; Garel, Thibault; Rosdahl, Joakim; Teyssier, Romain; 2018, MNRAS, 475, 4617, [Impact of Lyman alpha pressure on metal-poor dwarf galaxies](#)
22. Choi, Hoseung; Yi, Sukyoung K.; Dubois, Yohan; **Kimm, Taysun**; Devriendt, Julien. E. G.; Pichon, Christophe; 2018, ApJ, 856, 114, [Early-type Galaxy Spin Evolution in the Horizon-AGN Simulation](#)
21. Mitchell, Peter D.; Blaizot, J r my; Devriendt, Julien; **Kimm, Taysun**; Michel-Dansac, L o; Rosdahl, Joakim; Slyz, Adrienne; 2018, MNRAS, 474, 4279, [Gas flows in the circumgalactic medium around simulated high-redshift galaxies](#)
20. Katz, Harley; **Kimm, Taysun**; Sijacki, Debora; Haehnelt, Martin G.; 2017, MNRAS, 468, 4831, [Interpreting ALMA observations of the ISM during the epoch of reionization](#)
19. Kaviraj, S.; Laigle, C.; **Kimm, T.**; Devriendt, J. E. G.; Dubois, Y.; Pichon, C.; Slyz, A.; Chisari, E.; Peirani, S.; 2017, MNRAS, 467, 4739, [The Horizon-AGN simulation: evolution of galaxy properties over cosmic time](#)
18. **Kimm, Taysun**; Katz, Harley; Haehnelt, Martin; Rosdahl, Joakim; Devriendt, Julien; Slyz, Adrienne; 2017, MNRAS, 466, 4826, [Feedback-regulated star formation and escape of LyC photons from mini-haloes during reionization](#)
17. Rosdahl, Joakim; Schaye, Joop; Dubois, Yohan; **Kimm, Taysun**; Teyssier, Romain; MNRAS, 466, 11, [Snap, crackle, pop: sub-grid supernova feedback in AMR simulations of disc galaxies](#)
16. **Kimm, Taysun**; Cen, Renyue; Rosdahl, Joakim; Yi, Sukyoung K.; 2016, ApJ, 823, 52, [Formation of Globular Clusters in Atomic-cooling Halos Via Rapid Gas Condensation and Fragmentation during the Epoch of Reionization](#)
15. **Kimm, Taysun**; Cen, Renyue; Devriendt, Julien; Dubois, Yohan; Slyz, Adrienne; MNRAS, 451, 2900, [Towards simulating star formation in turbulent high-z galaxies with mechanical supernova feedback](#)
14. Cen, Renyue; **Kimm, Taysun**; 2015, ApJ, 801L, 25, [Quantifying Distributions of the Lyman Continuum Escape Fraction](#)
13. Dubois, Y.; Pichon, C.; Welker, C.; Le Borgne, D.; Devriendt, J.; Laigle, C.; Codis, S.; Pogosyan, D.; Arnouts, S.; Benabed, K.; Bertin, E.; Blaizot, J.; Bouchet, F.; Cardoso, J. -F.; Colombi, S.; de Lapparent, V.; Desjacques, V.; Gavazzi, R.; Kassir, S.; **Kimm, T.**; McCracken, H.; Milliard, B.; Peirani, S.; Prunet, S.; Rouberol, S.; Silk, J.; Slyz, A.; Sousbie, T.; Teyssier, R.; Tresse, L.; Treyer, M.; Vibert, D.; Volonteri, M.; MNRAS, 444, 1453, [Dancing in the dark: galactic properties trace spin swings along the cosmic web](#)
12. Cen, Renyue; **Kimm, Taysun**; 2014, ApJ, 794, 50, [Diverse Properties of Interstellar Medium Embedding Gamma-Ray Bursts at the Epoch of Reionization](#)
11. **Kimm, Taysun**; Cen, Renyue; 2014, ApJ, 788, 121, [Escape Fraction of Ionizing Photons during Reionization: Effects due to Supernova Feedback and Runaway OB Stars](#)
10. Cen, Renyue; **Kimm, Taysun**; 2014, ApJ, 782, 32, [Infrared Properties of z = 7 Galaxies from Cosmological Simulations](#)
9. **Kimm, Taysun**; Cen, Renyue; 2013, ApJ, 776, 35, [Heavy Dust Obscuration of z = 7 Galaxies in a Cosmological Hydrodynamic Simulation](#)

8. Dubois, Yohan; Pichon, Christophe; Devriendt, Julien; Silk, Joseph; Haehnelt, Martin; **Kimm, Taysun**; Slyz, Adrienne; 2013, MNRAS, 428, 2885, [Blowing cold flows away: the impact of early AGN activity on the formation of a brightest cluster galaxy progenitor](#)
7. **Kimm, T.**; Kaviraj, S.; Devriendt, J. E. G.; Cohen, S. H.; Windhorst, R. A.; Dubois, Y.; Slyz, A.; Hathi, N. P.; Ryan, R. E.; O'Connell, R. W.; Dopita, M. A.; Silk, J.; 2012, MNRAS, 425L, 96, [Constraining stellar assembly and active galactic nucleus feedback at the peak epoch of star formation](#)
6. Dubois, Yohan; Pichon, Christophe; Haehnelt, Martin; **Kimm, Taysun**; Slyz, Adrienne; Devriendt, Julien; Pogosyan, Dmitry; 2012, MNRAS, 423, 3616, [Feeding compact bulges and supermassive black holes with low angular momentum cosmic gas at high redshift](#)
5. Pichon, C.; Pogosyan, D.; **Kimm, T.**; Slyz, A.; Devriendt, J.; Dubois, Y.; 2011, MNRAS, 418, 2493, [Rigging dark haloes: why is hierarchical galaxy formation consistent with the inside-out build-up of thin discs?](#)
4. **Kimm, Taysun**; Slyz, Adrienne; Devriendt, Julien; Pichon, Christophe; 2011, MNRAS, 413L, 51, [Are cold flows detectable with metal absorption lines?](#)
3. **Kimm, Taysun**; Yi, Suhyoung K.; Khochfar, Sadegh; 2011, ApJ, 729, 11, [The Impact of Gas Stripping and Stellar Mass Loss on Satellite Galaxy Evolution](#)
2. **Kimm, Taysun**; Somerville, Rachel S.; Yi, Suhyoung K.; van den Bosch, Frank C.; Salim, Samir; Fontanot, Fabio; Monaco, Pierluigi; Mo, Houjun; Pasquali, Anna; Rich, R. M.; Yang, Xiaohu; 2009, MNRAS, 394, 1131 [The correlation of star formation quenching with internal galaxy properties and environment](#)
1. **Kimm, Taysun**; Yi, Suhyoung K.; 2007, ApJ, 670, 1048, [Intrinsic Axis Ratio Distribution of Early-Type Galaxies from the Sloan Digital Sky Survey](#)

SUBMITTED PAPERS

3. Katz, Harley; Ramsay, Marius; Rosdahl, Joakim; **Kimm, Taysun**; Blaizot, Jeremy; Haehnelt, Martin G.; Michel-Dansac, Leo; Garel, Thibault; Laigle, Clotilde; Devriendt, Julien; Slyz, Adrienne; 2019, Submitted to MNRAS, 2019arXiv190511414K, [How to Quench a Dwarf Galaxy: The Impact of Inhomogeneous Reionization on Dwarf Galaxies and Cosmic Filaments](#)
2. Galligan, Thomas P.; Katz, Harley; **Kimm, Taysun**; Rosdahl, Joakim; Blaizot, Jeremy; Devriendt, Julien; Slyz, Adrienne; 2019, Submitted to MNRAS, 2019arXiv190101264G, [deepCool: Fast and Accurate Estimation of Cooling Rates in Irradiated Gas with Artificial Neural Networks](#)
1. Michel-Dansac, Leo; Blaizot, Jeremy; Garel, Thibault; Verhamme, Anne; **Kimm, Taysun**; Trebitsch, Maxime; 2019, Astronomy & Astrophysics, Submitted to A&A, [RASCAS: RAdiation SCattering in Astrophysical Simulations](#)

Date	Type	Title	Location
2019/09	RAMSES user meeting 2019	Effects of radiation-modulated cooling on stellar feedback	Copenhagen, Denmark
2019/06	International Conference (Feedback and its role in Galaxy Formation)	Lyman alpha pressure: strong feedback in metal-poor environments	Spetse, Greece
2019/05	Department Colloquium (Invited)	Multi-scale physical processes in Galaxy Formation	Kyungpook National University, Daegu
2019/05	Department Colloquium (Invited)	Multi-scale physical processes in Galaxy Formation	Chungnam National University, Daejeon
2019/05	Department Colloquium (Invited)	Multi-scale physical processes in Galaxy Formation	Sejong University, Seoul
2019/02	SPHINX-RASCAS collaboration meeting (Invited)	LyC-LyA connection in simulated turbulent clouds and future prospects	Lyon, France
2019/02	Korean Lyman Alpha Workshop (Invited)	Escape of LyC and LyA photons from simulated turbulent clouds	Sejong University, Seoul
2019/01	Astronomy Seminar	Radiation-modulated cooling and momentum transfer	University of Oxford
2018/10	International conference (7th workshop on cosmology and galaxy evolution, Invited)	Impact of Lyman alpha pressure on metal-poor dwarf galaxies	Korea Institute of Advanced Study, Seoul
2018/10	International conference (East Asian Numerical Astronomy Meeting, Invited)	Lyman alpha pressure on metal-poor dwarf galaxies	Tainan, Taiwan
2018/09	International conference (RAMSES user meeting, Invited)	Impact of Lyman alpha pressure on metal-poor dwarf galaxies	Lyon, France
2018/04	International conference (Tokyo Spring Cosmic Lyman alpha workshop)	Impact of LyA pressure on gas-rich, metal-poor galaxies	University of Tokyo
2018/01	Astronomy Seminar (Invited)	Impact of Lyman alpha pressure in metal-poor dwarf galaxies	University of Cambridge
2017/12	Department Colloquium (Invited)	Stellar feedback in galaxy formation simulations: where do we stand?	Seoul National University
2017/01	International conference (Dawn of galaxies)	Radiation-hydrodynamic simulations of dwarf galaxies and their contribution to Reionization	Austria
2016/12	Department Colloquium (Invited)	Simulation reionization of the Universe with RHD simulations	Surrey University, UK
2016/10	International conference (6th workshop on cosmology and galaxy evolution, Invited)	RHD simulations of dwarf galaxies and their contribution to Reionization	Korea Institute of Advanced Study, Seoul
2016/10	International Conference (RAMSES user meeting)	Radiation hydrodynamic simulations of mini-halos	Institut Astrophysique de Paris, France
2016/07	International conference (Signals from the Deep Past)	Feedback-regulated escape of LyC photons from mini-halos	Valletta, Malta
2015/10	Workshop on galaxy clusters and evolution (Invited)	Regulating star formation in turbulent galaxies	Yonsei University
2015/10	Astronomy Seminar	Feedback-regulated star formation and reionization	University of Cambridge
2015/09	International conference (RAMSES user meeting)	Regulating star formation in turbulent high- a galaxies	University of Oxford
2015/06	SPINE collaboration meeting (Invited)	Supernova feedback at high redshift galaxies	University of Cambridge
2015/02	Department Colloquium (Invited)	Regulation of star formation in turbulent high- z galaxies supernova feedback	Rutgers University
2015/02	Department Colloquium (Invited)	Feedback-driven escape of LyC photons during reionization	Korea Institute of Advanced Study, Seoul
2015/01	Department Colloquium (Invited)	Feedback-driven escape of LyC photons during reionization	Korea Space Science Institute, Daejeon
2014/11	SPINE collaboration meeting (Invited)	<i>Escape of LyC photons in a feedback-regulated universe</i>	Porquerolle, France
2014/10	SFIR Seminar (Invited)	<i>Simulating high-z galaxies with mechanical supernova feedback</i>	Princeton University