

Tsang Keung Chan: CURRICULUM VITAE

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Education

University of California, San Diego	Ph.D. Candidate in Physics Thesis advisor: Prof. Dušan Kereš	2013 - Present
The Chinese University of Hong Kong	MPhil. in Physics Thesis advisor: Prof. Pui Tang Leung	2011 - 2013
The Chinese University of Hong Kong	B.S. in Physics with First-class Honors	2008 - 2011
University of California, Berkeley	Overseas Program for Undergraduate Students	Jan-Aug 2010

Research Interests: *Galaxy simulations with a focus on stellar feedback*

- Cosmic ray feedback in galaxy simulations
- The structure of dark matter halos
- The origin of ultra diffuse galaxies
- Cosmological simulations of galaxy formation

Research Experiences and Skills

- Collaborating with members from different major universities, resulting in tens of publications
- Running large scale simulations on several national supercomputing centers
- Handling and analysing thousands TB data sets
- Programming in python, C, fortran, mathematica
- Parallel computing with MPI and OpenMP
- Co-developing modules in the GIZMO code

Grants, Honors and Awards

- UC San Diego Graduate Student Association Travel Grant 2018
- UC San Diego Physics Chair's Challenge Travel Grant 2017
- Professor Charles K. Kao Student Research Exchange Scholarship 2010
- Chung Chi Scholarships for Excellence, the Chinese University of Hong Kong 2010
- Dean's Honours List, the Chinese University of Hong Kong 2009
- CN Yang Scholarship, the Chinese University of Hong Kong 2009, 2011
- Bronze medal, International Physics Olympiad 2007

Publications

First Author

- [1] T. K. Chan et al. "The origin of ultra diffuse galaxies: stellar feedback and quenching". In: *MNRAS* 478 (July 2018), pp. 906–925. DOI: 10.1093/mnras/sty1153. arXiv: 1711.04788.
- [2] T. K. Chan, A. P. O. Chan, and P. T. Leung. "Universality and stationarity of the I-Love relation for self-bound stars". In: *Phys. Rev. D* 93.2, 024033 (Jan. 2016), p. 024033. DOI: 10.1103/PhysRevD.93.024033. arXiv: 1511.08566 [gr-qc].

- [3] T. K. Chan et al. “The impact of baryonic physics on the structure of dark matter haloes: the view from the FIRE cosmological simulations”. In: *MNRAS* 454 (Dec. 2015), pp. 2981–3001. DOI: 10.1093/mnras/stv2165. arXiv: 1507.02282.
- [4] T. K. Chan, A. P. O. Chan, and P. T. Leung. “I-Love relations for incompressible stars and realistic stars”. In: *Phys. Rev. D* 91.4, 044017 (Feb. 2015), p. 044017. DOI: 10.1103/PhysRevD.91.044017. arXiv: 1411.7141 [astro-ph.SR].
- [5] T. K. Chan et al. “Multipolar universal relations between f-mode frequency and tidal deformability of compact stars”. In: *Phys. Rev. D* 90.12, 124023 (Dec. 2014), p. 124023. DOI: 10.1103/PhysRevD.90.124023. arXiv: 1408.3789 [gr-qc].

Co-author

- [1] M. E. Orr et al. “What FIREs up star formation: the emergence of the Kennicutt-Schmidt law from feedback”. In: *MNRAS* 478 (Aug. 2018), pp. 3653–3673. DOI: 10.1093/mnras/sty1241. arXiv: 1701.01788.
- [2] K. L. S. Yip, T. K. Chan, and P. T. Leung. “Perturbative solution to the Lane-Emden equation: an eigenvalue approach”. In: *MNRAS* 465 (Mar. 2017), pp. 4265–4280. DOI: 10.1093/mnras/stw3041. arXiv: 1611.07202 [astro-ph.SR].
- [3] K. El-Badry et al. “When the Jeans Do Not Fit: How Stellar Feedback Drives Stellar Kinematics and Complicates Dynamical Modeling in Low-mass Galaxies”. In: *ApJ* 835, 193 (Feb. 2017), p. 193. DOI: 10.3847/1538-4357/835/2/193. arXiv: 1610.04232.
- [4] M. E. Orr et al. “Stacked Star Formation Rate Profiles of Bursty Galaxies Exhibit Coherent Star Formation”. In: *ApJL* 849, L2 (Nov. 2017), p. L2. DOI: 10.3847/2041-8213/aa8f93. arXiv: 1709.10099.
- [5] P. F. Hopkins et al. “FIRE-2 simulations: physics versus numerics in galaxy formation”. In: *MNRAS* 480 (Oct. 2018), pp. 800–863. DOI: 10.1093/mnras/sty1690. arXiv: 1702.06148.
- [6] Z. Hafen et al. “Low-redshift Lyman limit systems as diagnostics of cosmological inflows and outflows”. In: *MNRAS* 469 (Aug. 2017), pp. 2292–2304. DOI: 10.1093/mnras/stx952. arXiv: 1608.05712.
- [7] F. van de Voort et al. “On the deuterium abundance and the importance of stellar mass loss in the interstellar and intergalactic medium”. In: *MNRAS* 477 (June 2018), pp. 80–92. DOI: 10.1093/mnras/sty591. arXiv: 1704.08254.
- [8] A. Fitts et al. “fire in the field: simulating the threshold of galaxy formation”. In: *MNRAS* 471 (Nov. 2017), pp. 3547–3562. DOI: 10.1093/mnras/stx1757. arXiv: 1611.02281.
- [9] A. L. Muratov et al. “Metal flows of the circumgalactic medium, and the metal budget in galactic haloes”. In: *MNRAS* 468 (July 2017), pp. 4170–4188. DOI: 10.1093/mnras/stx667. arXiv: 1606.09252.
- [10] F. van de Voort et al. “The impact of stellar feedback on hot gas in galaxy haloes: the Sunyaev-Zel’dovich effect and soft X-ray emission”. In: *MNRAS* 463 (Dec. 2016), pp. 4533–4544. DOI: 10.1093/mnras/stw2322. arXiv: 1604.01397.
- [11] K. El-Badry et al. “Breathing FIRE: How Stellar Feedback Drives Radial Migration, Rapid Size Fluctuations, and Population Gradients in Low-mass Galaxies”. In: *ApJ* 820, 131 (Apr. 2016), p. 131. DOI: 10.3847/0004-637X/820/2/131. arXiv: 1512.01235.
- [12] Y.-H. Sham et al. “Unveiling the Universality of I-Love-Q Relations”. In: *ApJ* 798, 121 (Jan. 2015), p. 121. DOI: 10.1088/0004-637X/798/2/121. arXiv: 1410.8271 [gr-qc].
- [13] Y. J. Zhang et al. “Separation of space-time and matter in polar oscillations of compact stars”. In: *MNRAS* 438 (Mar. 2014), pp. 3222–3232. DOI: 10.1093/mnras/stt2428.

Reports

- Summer Research Report on “the effect of muon propagation on underground dark matter detection experiments”, with Prof. Kam Biu Luk in University of California Berkeley, Aug 2010

Conferences and Workshops

Talks

- *Invited Talk* at “*The Bewildering Nature of Ultra-diffuse Galaxies*” workshop at Lorentz Center, Leiden, Netherlands 2018
- Santa Cruz workshop on galaxy formation at University of California at Santa Cruz, United States 2015,2017,2018
- Galaxy Formation and Evolution in Southern California at California institute of technology, Pasadena,United States 2017
- Feedback In Realistic Environment workshop at University of California at Berkeley, United States 2016
- Feedback In Realistic Environment workshop at California institute of technology, Pasadena, United States 2015
- Feedback In Realistic Environment workshop at Northwestern University, Evanston, United States 2014

Poster Presentations

- 15th Potsdam Thinkshop on “*Understanding the role of feedback in galaxy formation*” at Potsdam, Germany 2018
- 228th American Astronomical Society meeting at San Diego, United States 2016

Teaching

- Teaching assistant for PHYS 7 “*Galaxies and Cosmology*” by Prof. Karin Sandstrom, at University of California at San Diego Winter 2016
- Teaching assistant for PHY2005 “*Quantitative Methods for Basic Physics II*” by Prof. Emily S.C. Ching, at the Chinese University of Hong Kong Second Term, 2013
- Teaching assistant for PHY2351 “*Basic Computational Physics*” by Dr. Lin Lap Ming, at the Chinese University of Hong Kong First Term 2012

Outreach

- Laboratory Demonstrator at *Tech Trek* 2017
- Laboratory Demonstrator at *IOA Science & Innovation camp* 2017

References

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