

Chentao YANG (杨辰涛)*

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Personal Information

Current status: ESO Fellow in Chile (with duties at ALMA)
Gender: Male
Date of birth: May, 1988
Citizenship: P.R. China
Languages: Chinese (native proficiency),
English (full professional proficiency),
French (elementary proficiency)

Employment

European Southern Observatory (ESO) Fellow, Santiago, Chile 2017.11 – present

Education

Institut d'Astrophysique Spatiale, Université Paris-Sud, France 2014.11 – 2017.10
(Co-tutelle) PhD degree in Astrophysics
Supervisor: Alain Omont, Alexandre Beelen
Purple Mountain Observatory, Chinese Academy of Sciences, P.R. China 2013.09 – 2017.10
(Co-tutelle) PhD degree in Astrophysics
Supervisor: Yu Gao
Astronomy Department, Beijing Normal University, P.R. China 2010.09 – 2013.06
Master's degree in Astrophysics
Supervisor: Yu Gao, Biwei Jiang
Astronomy Department, Beijing Normal University, P.R. China 2006.09 – 2010.07
Bachelor's degree in Astronomy

Computer Skills

Languages: IDL, FORTRAN, Matlab, ~~TEX~~, Bash/Csh, Python, Julia
Operating systems: GNU/Linux (CentOS, openSUSE, etc.), Mac OS X, Windows
Software: GILDAS, Starlink, DS9, CASA, HIPE, TOPCAT

Research projects

- Observations of the interstellar medium in submillimeter galaxies Current
- Submillimeter H₂O lines as the ISM tracers in dusty star-forming galaxies Current
- PhD Thesis* • Physical conditions of the interstellar medium in high-redshift submillimetre bright galaxies 2013–2017
- Master Thesis* • Water vapor in galaxies near and far 2011–2013
- Bachelor Thesis* • Cold dust in nearby galaxies 2009–2010
- Design of the experiments for the course “Radio Astronomy” (National Undergraduates Innovative Experimentation Program) 2008

*In Chinese, my first name 辰涛 (Chentao) means star waves, in which 辰 (chen) means stars and 涛 (tao) means waves.

Accepted PI Proposals
(^{A/B}: A/B-rated)

- The Atacama Large Millimeter/submillimeter Array (ALMA), **3 proposals, 26 hrs (EU)**. 2018
 - 2018.1.00797.S^B, 2018.1.00861.S^B, 2018.1.01710.S
- The NOthern Extended Millimeter Array (NOEMA), **13 proposals, 150 hrs.** 2013–2018
 - W0B3^B, S14CT^B, W14EV, S15CT^B, W15EQ^B, S16CG^B, S16CF^B, S16BT^B, W16DQ^B, W16DO^B, S18DC^A, S18CT^A, W18EB^A
- The IRAM-30m telescope (IRAM-30m), **3 proposals, 76 hrs.** 2015–2016
 - 079-15^A, 196-15^B, 076-16^A
- The Karl G. Jansky Very Large Array (JVLA/NRAO), **3 proposals, 47 hrs.** 2014–2018
 - 14B-259^B, 15B-177, 18B-190
- The Atacama Pathfinder EXperiment (APEX/ESO) telescope, **2 proposal, 55 hrs.** 2016–2018
 - 097.B-0914^B (SEPIA-5), 0103.B-0471^A (SEPIA-9)

Accepted proposals as a co-I:

About 45 proposals including ALMA, APEX, NOEMA (including 1 Large Program, Z-GAL), IRAM-30m, JVLA, JCMT (including 2 Large Programs, JINGLE and MALATANG) and GMRT.

Observing Experience

- The IRAM 30m telescope (IRAM30/IRAM), 2013–2016: > 100 hrs;
- The James Clerk Maxwell Telescope (JCMT/EAO), 2016: > 100 hrs;
- The ALMA Observatory (ALMA/JAO), 2018–present: serving as Astronomer on Duty at the ALMA Operation Support Facility.

Refereed Publications
(†: 1st/2nd author)

- 15. Planck’s Dusty Gems. VII. Atomic carbon and molecular gas in dusty starburst galaxies at $z = 2$ to 4;**
N. P. H. Nesvadba, R. Canameras, R. Kneissl, S. Koenig, C. Yang, E. Le Floch, A. Omont and D. Scott 2019, A&A in press (arXiv:1812.04653);
- 14. VALES V: A kinematic analysis of the molecular gas content in H -ATLAS galaxies at $z \sim 0.03$ – 0.35 using ALMA;**
J. Molina, E. Ibar, V. Villanueva, A. Escala, C. Cheng, M. Baes, H. Messias, C. Yang, F.E. Bauer, P. P. Van der Werf, R. Leiton, M. Aravena, A. M. Swinbank, M.J. Michałowski, A. Muñoz-Arancibia, G. Orellana, T.M. Hughes, D. Farrah, G. De Zotti, M.A. Lara-López, S. Eales & L. Dunne 2019, MNRAS, 482, 1499;
- † **13. Planck’s Dusty GEMS. VI. Multi- J CO excitation and interstellar medium conditions in dusty starburst galaxies at $z = 2$ – 4**
R. Cañameras, C. Yang, N. P. H. Nesvadba, A. Beelen, R. Kneissl, S. Koenig, E. Le Floch, M. Limousin, S. Malhotra, A. Omont, D. Scott 2018, A&A, 620, A61;
- 12. JINGLE, a JCMT legacy survey of dust and gas for galaxy evolution studies: I. Survey overview and first results;**
Amélie Saintonge, Christine D. Wilson, Ting Xiao, Lihwai Lin, Ho Seong Hwang, Tomoka Tosaki, Martin Bureau, Phillip J. Cigan, Christopher J. R. Clark, David L. Clements, Ilse De Looze, Thavisha Dharmawardena, Yang Gao, Walter K. Gear, Joshua Greenslade, Isabella Lamperti, Jong Chul Lee, Cheng Li, Michał J. Michałowski, Angus Mok, Hsi-An Pan, Anne E. Sansom, Mark Sargent, Matthew W. L. Smith, Thomas Williams, Chentao Yang, Ming Zhu, Gioacchino Accurso, Pauline Barmby, Elias Brinks, Nathan Bourne, Toby Brown and 60 other authors 2018, MNRAS, 481, 3497;
- 11. Far-infrared *Herschel* SPIRE spectroscopy of lensed starbursts reveals physical conditions of ionised gas;**
Zhi-Yu Zhang, R. J. Ivison, R. D. George, Yinghe Zhao, L. Dunne, R. Herrera-Camus, A. J. R. Lewis, Daizhong Liu, D. Naylor, Iván Oteo, D. A. Riechers, Ian Smail, Chentao Yang, Stephen Eales, Ros Hopwood, Steve Maddox, Alain Omont, and Paul van der Werf 2018, MNRAS, 481, 59;
- 10. Extreme conditions in the molecular gas of lensed star-forming galaxies at $z \sim 3$;**

Paola Andreani; Edwin Retana-Montenegro; Zhi-Yu Zhang; Padelis Papadopoulos; [Chentao Yang](#); Simona Vegetti 2018, A&A, 615, A142;

9. **The MALATANG Survey: the $L_{\text{gas}}-L_{\text{IR}}$ correlation on sub-kiloparsec scale in six nearby star-forming galaxies as traced by HCN $J = 4 - 3$ and HCO⁺ $J = 4 - 3$;**
Qing-Hua Tan, Yu Gao, Zhi-Yu Zhang, Thomas Greve, Xue-Jian Jiang, Christine Wilson, [Chen-Tao Yang](#), Ashley Bemis, Aeree Chung, Satoki Matsushita, Yong Shi, Yi-Ping Ao, Elias Brinks, Malcolm J. Currie, Timothy A. Davis, Richard de Grijs, Luis C. Ho, Masatoshi Imanishi, Kotaro Kohno, Bumhyun Lee, Harriet Parsons, Mark G. Rawlings, Dimitra Rigopoulou, Erik Rosolowsky, Joanna Bulger, Hao Chen and 20 other authors 2018, ApJ, 860, 165;
8. **VALES: IV. Exploring the transition of star formation efficiencies between normal and starburst galaxies using APEX/SEPIA and ALMA at low redshift;**
C. Cheng, E. Ibar, T. M. Hughes, V. Villanueva, R. Leiton, G. Orellana, A. Munoz-Arancibia, N. Lu, C. K. Xu, C. N. A. Willmer, J. Huang, T. Cao, [C. Yang](#), Y. Q. Xue and K. Torstenson 2018, MNRAS, 475, 248;
7. **The *Herschel* Bright Sources (HerBS): Sample definition and SCUBA-2 observations;**
Tom J. L. C. Bakx, S. A. Eales, M. Negrello, M. W. L. Smith, E. Valiante, W. S. Holland, M. Baes, N. Bourne, D. L. Clements, H. Dannerbauer, G. De Zotti, L. Dunne, S. Dye, C. Furlanetto, R. J. Ivison, S. Maddox, L. Marchetti, M. J. Michałowski, A. Omont, I. Oteo, J. L. Wardlow, P. van der Werf, [C. Yang](#) 2018, MNRAS, 273, 1751;
6. **High dense gas fraction in intensely star forming dusty galaxies;**
I. Oteo, Z-Y. Zhang, [C. Yang](#), R. J. Ivison, A. Omont, M. Bremer, S. Bussmann, A. Cooray, P. Cox, H. Dannerbauer, L. Dunne, S. Eales, C. Furlanetto, R. Gavazzi, Y. Gao, T. R. Greve, H. Nayyeri, M. Negrello, R. Neri, D. Riechers, R. Tunnard, J. Wagg, and P. Van der Werf 2017, ApJ, 850, 170;
- †5. **Molecular gas in the *Herschel*-selected strongly lensed submillimeter galaxies at $z \sim 2-4$ as probed by multi- J CO lines;**
[C. Yang](#), A. Omont, A. Beelen, Y. Gao, P. van der Werf, R. Gavazzi, Z.-Y. Zhang, R. Ivison, M. Lehnert, D. Liu, I. Oteo, E. González-Alfonso, H. Dannerbauer, P. Cox, M. Krips, R. Neri, D. Riechers, A. J. Baker, M.J. Michałowski, A. Cooray and I. Smail 2017 A&A, 608, A144;
- †4. **Submillimeter H₂O and H₂O⁺ emission in lensed ultra- and hyper-luminous infrared galaxies at $z \sim 2-4$;**
[C. Yang](#), A. Omont, A. Beelen, E. González-Alfonso, R. Neri, Y. Gao, P. van der Werf, A. Weiß, R. Gavazzi, N. Falstad, A. J. Baker, R. S. Bussmann, A. Cooray, P. Cox, H. Dannerbauer, S. Dye, M. Guélin, R. Ivison, M. Krips, M. Lehnert, M. J. Michałowski, D. A. Riechers, M. Spaans and E. Valiante 2016, A&A, 595, A80;
3. **High- J CO Versus far-infrared relations in normal and starburst galaxies;**
Daizhong Liu, Yu Gao, Kate Isaak, Emanuele Daddi, [Chentao Yang](#), Nanyao Lu and Paul van der Werf 2015, ApJ, 810, L14;
- †2. **Water vapor in nearby infrared galaxies as probed by *Herschel*;**
[Chentao Yang](#), Yu Gao, A. Omont, Daizhong Liu, K. G. Isaak, D. Downes, P. P. van der Werf and Nanyao Lu 2013, ApJ, 771, L24;
- †1. **H₂O emission in high- z ultra-luminous infrared galaxies;**
A. Omont, [C. Yang](#), P. Cox, R. Neri, A. Beelen, R. S. Bussmann, R. Gavazzi, P. van der Werf, D. Riechers, D. Downes, M. Krips, S. Dye, R. Ivison, J. D. Vieira, A. Weiß, J. E. Aguirre, M. Baes, A. J. Baker, F. Bertoldi, A. Cooray, H. Dannerbauer, G. De Zotti, S. A. Eales, H. Fu, Y. Gao, M. Guélin, A. I. Harris, M. Jarvis, M. Lehnert, L. Leeuw, R. Lupu, K. Menten, M. J. Michałowski, M. Negrello, S. Serjeant, P. Temi, R. Auld, A. Dariush, L. Dunne, J. Fritz, R. Hopwood, C. Hoyos, E. Ibar, S. Maddox, M. W. L. Smith, E. Valiante, J. Bock, C. M. Bradford, J. Glenn and K. S. Scott 2013, A&A, 551, A115;

Publications in Preparation
(†: 1st/2nd author)

- † **CO, H₂O, H₂O⁺ line and dust emission in a $z = 3.6$ strongly lensed starburst merger at sub-kiloparsec scales;**
C. Yang, R. Gavazzi, A. Beelen, P. Cox, A. Omont, M. Lehnert, Y. Gao, R. J. Ivison, A. M. Swinbank, L. Barcos-Muñoz, R. Neri, A. Cooray, S. Dye, S. Eales, H. Fu, E. González-Alfonso, E. Ibar, M. J. Michałowski, H. Nayyeri, M. Negrello, J. Nightingale, I. Pérez-Fournon, D. A. Riechers, I. Smail and P. P. van der Werf submitted to A&A;
- **A SCUBA-2 selected Herschel-SPIRE dropout – A population of $z > 6$ SMGs or a cool $z = 4$ population of DSFGs?**
J. Greenslade, E. Aguilar, D. L. Clements, H. Dannerbauer, T. Cheng, G. Petitpas, C. Yang, H. Messias, I. Oteo, D. Farrah, M. J. Michałowski, I. Pérez Fournon, I. Aretxaga, M. S. Yun, S. Eales, L. Dunne, A. Cooray, P. Andreani, D.H. Hughes, M. Velázquez, D. Sánchez-Argüelles, N. Ponthieu submitted to MNRAS.
 - **The molecular-gas properties in the gravitationally lensed merger HATLAS J142935.3-002836;**
Hugo Messias, Neil Nagar, Zhi-Yu Zhang, Iván Oteo, Simon Dye, Nicholas Timmons, Eduardo Ibar, Paul van der Werf, Dominik Riechers, Stephen Eales, Rob Ivison, Michał J. Michałowski and Chentao Yang submitted to MNRAS;
- † **The excitation of H₂O lines in two strongly lensed submillimeter galaxies at a look-back time of 12 Gyr**
C. Yang, E. González-Alfonso, A. Omont, R. Neri, A. Beelen, Y. Gao, P. van der Werf, P. Cox, R. Gavazzi, M. Lehnert, M. Negrello, R. Ivison and D. Riechers to be submitted to A&A;
- **JINGLE, a JCMT legacy survey of dust and gas for galaxy evolution studies: II. SCUBA-2 data reduction and dust flux catalogs**
Matthew W. L. Smith, Christopher J. R. Clark, Ilse De Looze, Isabella Lamperti, Amélie Sain-tonge, Christine L. Wilson, Martin Bureau, Eun Jung Chung, Phillip J. Cigan, David L. Clements, Thavisha Dharmawardena, Lapo Fanciullo, Yang Gao, Walter Gear, Joshua Greenslade, Ho Seong Hwang, Francisca Kemper, Jong Chul Lee, Cheng Li, Lihwai Lin, Lijie, Liu, Daniel Molnar, Hsi-An Pan, Mark Sargent, Connor M. A. Smith, Sheona Urquhart, Thomas G. Williams, Ting Xiao, Chentao Yang and Ming Zhu to be submitted to MNRAS.

Presentations

Talks & Posters, ordered chronologically.

- Seminar talk* • The Cosmic Dawn Center, DTU-Space division, Lyngby, Denmark December 12, 2018
Physical conditions of the ISM in strongly lensed dusty star-forming galaxies in the early universe
- Contributed talk* • The Laws of Star Formation: From the Cosmic Dawn to the Present Universe, @Cambridge University, UK July 2–6, 2018
Molecular gas in high-redshift strongly lensed dusty starbursts as traced by multi-J CO lines
- Lunch talk* • Centre for Extragalactic Astronomy, Durham University, UK June 29, 2018
Physical conditions of the interstellar medium in strongly lensed submillimeter galaxies at high-redshift
- Seminar talk* • Department of Physics, Oxford University, UK June 28, 2018
Physical conditions of the interstellar medium in high-redshift strongly lensed dusty star-forming galaxies
- Invited talk* • The ALMA Quest for Our Cosmic Origins: a symposium to honor Pierre Cox, @ALMA Observatory, Santiago, Chile March 27, 2018
Physical conditions of the ISM in high-redshift lensed submillimeter galaxies
- Seminar talk* • Instituto de Física y Astronomía, Universidad de Valparaíso, Chile January 18, 2018
Physical conditions of the interstellar medium in high-redshift lensed submillimeter

galaxies

- Seminar talk* • Institute of Astrophysics, PUC de Chile, Santiago, Chile December 20, 2017
Physical conditions of the interstellar medium in high-redshift lensed submillimeter galaxies
- Seminar talk* • CAS South America Center for Astronomy, Santiago, Chile December 11, 2017
Tracing the physical conditions of the interstellar medium in high-redshift lensed submillimeter galaxies
- Seminar talk* • Astronomy department of Beijing Normal University, Beijing, China December 23, 2016
Physical conditions of the ISM in high-redshift submillimeter galaxies
- Contributed talk* • The Eighth Sino-French “LIA-origins” Workshop: Probing Baryons in the Universe, @Sèvres, Hauts-de-Seine, France November 14–18, 2016
H₂O and H₂O⁺ emission in lensed ultra- and hyper-luminous infrared galaxies at $z \sim 2-4$
- Contributed talk* • Water in the Universe: From Clouds to Oceans, @European Space Agency (ESA/ESTEC), Noordwijk, Netherland April 11–15, 2016
H₂O Emission in Ultra-luminous Infrared Galaxies at High- z
- Poster* • Journées Nationales PNCG 2015, @Nice, France December 15–16, 2015
Submillimeter H₂O line emission in the lensed ultra-luminous infrared galaxies at $z \sim 2-4$
- Poster* • XXIX IAU-GA IAUS315: From interstellar clouds to star-forming galaxies: universal processes? @Honolulu Hawaii, USA August 03–07, 2015
Submillimeter H₂O emission in infrared bright galaxies near and far
- Poster* • XXIX IAU-GA FM15: Search for Water and Life’s Building Blocks in the Universe, @Honolulu Hawaii, USA August 03–05, 2015
Water vapor emission in ultra-luminous infrared galaxies at $z \sim 2-4$

Service

- Referee for scientific journals: *ApJ*
- Technical Secretary of the ALMA Proposal Review meeting, 2018

Summer Schools and Visiting Programs

- **IAP Visitorship** July 7–21, 2018
Institut d’Astrophysique de Paris, France
- **International Young Astronomers School on Large Ground-based 21st Century Radio Instruments** November 16–20, 2015
Observatoire de Paris-Meudon, France
- **The LIA-Origins Short Visiting Program** October 30 – December 13, 2013
Institut d’Astrophysique de Paris & Institut d’Astrophysique Spatiale, France
- **8th IRAM Millimeter Interferometry School** October 15 – October 19, 2012
IRAM, France
- **The LIA-Origins Short Visiting Program** February 15 – March 31, 2012
Institut d’Astrophysique de Paris, France

(last update: 22-Dec-2018)