Chien-Ting Chen (陳建廷)

Address
525 Davey Lab
Department of Astronomy and Atrophysics
The Pennsylvania State University,
University Park 16802, USA
Phone 814-863-5505

E-mail
ctchen@psu.edu
Website
http://ctjchen.github.io/

Education

Postdoctoral Scholar, Astronomy and Astrophysics
The Pennsylvania State University, University Park PA (Aug 2015 - present)
Ph.D., Physics and Astronomy
Dartmouth College, Hanover, NH (June 2015) Dissertation: Supermassive Black Hole Accretion and Connections to Star Formation in Galaxies
Advisor: Professor Ryan Hickox
Master of Science, Astronomy
National Tsing Hua University, Taiwan (NTHU)
Thesis: The relativistic shockwave solutions in the collapse of singular isothermal sphere
Advisor: Dr. Mike J. Cai
Bachelor of Science, Physics
National Tsing Hua University, Taiwan (NTHU)

Research Interests

1. Coevolution between galaxies and SMBHs 2. Primordial BH seeding mechanisms 3. Galaxy evolution and large scale structure 4. AGN physics and general relativity.

Research Experience

- I am an active member for several world-leading extragalactic survey teams, including *NuSTAR* science working groups, the Boötes survey collaboration, and the SERVS-XMM-LSS survey.
- I have extensive experience in analyzing multiwavelength data of galaxies and AGNs in wide-field extragalactic surveys. I am also familiar with machine learning algorithms and various statistical analysis techniques.
- I am well-versed in X-ray data analysis with Chandra, XMM-Newton, Swift/XRT and NuSTAR observations. I am currently leading the data analysis and catalog production of the recently awarded 1.3 Ms XMM-Newton survey in the XMM-LSS field.
- I have 20 nights of observing experience in both of the 2.4m and 1.3m telescopes at MDM observatory, which includes photometric, multi-object and long-slit spectroscopic observations. I also have experience in reducing and analyzing optical spectra.
- I have theoretical background in the general relativistic framework of black hole formation. In my M.S. thesis, I developed numerical and analytical solutions to general relativistic sphere featuring inside-out shockwaves and the formation of a central BH.

Technical Skills

Python, IDL, XSPEC, CIAO, HEASoft, XMM-SAS, shell scripts, LaTeX

Selected Presentations

I have presented my research in 10 seminar/colloquium talks, I have also participate conferences through 10 contributed talk and 4 poster presentations as of January 2017.

- *Contributed talk, 2016.8* "A NuSTAR selected sample of AGNs in low-mass galaxies", Hidden Monsters: Obscured AGN and connections to galaxy evolution workshop, Hanover, NH, USA

- *Dissertation talk, 2015.1* "AGN accretion, obscuration and star formation in luminous galaxies", 225th AAS meeting, Seattle, WA, USA

- *Contributed talk, 2014.7* "Obscuration and star formation in luminous quasars", AGN vs SF workshop, Durham, UK

- *Poster, 2014.5*, "The links between AGNs and the star formation in their host galaxies", Multiwavelength-surveys: Galaxy Formation and Evolution from the early universe to today Dubrovnik, Croatia

- *Contributed talk, 2013.10*, " A correlation between star formation rate and average black hole accretion in star forming galaxies", IAU symposium: Multiwavelength AGN Surveys and Studies, Yerevan, Armenia

- *Talk, 2012.11*, "Probing the hidden AGN activities in star-forming galaxies ", Special seminar, Academia Sinica Institute of Astronomy and Astrophysics, Taiwan

List of Publications

2016-2017.01 : 2 papers accepted as first-author, 2 papers submitted/published as second/third author, and 6 papers as a co-author.

Publications

First Author

1. **Chen, Chien-Ting et al.** ; A Correlation between Star Formation Rate and Average Black Hole Accretion in Star-forming Galaxies. *The Astrophysical Journal*, v. 773, Issue 1, article id. 3 (2013).
2. **Chen, Chien-Ting** and Hickox, Ryan, A correlation between star formation rate and average black hole accretion rate in star forming galaxies. Conference proceedings for IAU Symposium No. 304: Multiwavelength AGN Surveys and Studies.
3. **Chen, Chien-Ting et al.**, A connection between obscuration and star formation in luminous quasars. *The Astrophysical Journal*, v. 802, Issue 1, article id. 50. (2015).
4. **Chen, Chien-Ting et al.**, The X-ray and Mid-Infrared luminosities in Luminous Type 1 Quasars, *ApJ accepted, arXiv e-prints:1701.05207.*
5. **Chen, Chien-Ting et al.**, Hard X-ray selected AGNs in low-mass galaxies from the NuSTAR serendipitous survey, *ApJ accepted, arXiv e-prints:1701.08768.*

Second/Third Author

1. Hainline, Hickox & **Chen, Chien-Ting** et al. A Tale of Two Narrow-Line Regions: Ionization, Kinematics, and Spectral Energy Distributions for a Local Pair of Merging Obscured Active Galaxies. *The Astrophysical Journal*, v. 823, Issue 1, article id. 42.
2. Yang, Guang; **Chen, Chien-Ting et al.** Blackhole Growth is Mainly Linked to Host-galaxy Stellar Mass Rather than Star Formation Rate (ApJ resubmitted)

Co-author

1. Lansbury et al., 2016. The NuSTAR Serendipitous Survey: The 40 month catalog and the properties of the distant high energy X-ray source population *ApJ accepted, arXiv:1612.06389.*
2. Ricci et al., 2016. NuSTAR observations of WISE J1036+0449, a Galaxy at z$\sim$ 1 obscured by hot dust *ApJ accepted, arXiv:1609.04808*

3. Brightman et al., 2016. A Growth-rate Indicator for Compton-thick Active Galactic Nuclei. *The Astrophysical Journal*, v. 826, Issue 1, article id. 93
4. Lamassa et al., 2016. Peering Through the Dust: NuSTAR Observations of Two FIRST-2MASS Red Quasars *The Astrophysical Journal*, v. 820, Issue 1, article id. 70.
5. Peterson et al. 2014. Reverberation Mapping of the Seyfert 1 Galaxy NGC 7469. *The Astrophysical Journal*, Volume 795, Issue 2, article id. 149.
6. Hickox et al. 2014. Black hole variability and the star formation-AGN connection: Do all star-forming galaxies host an AGN? *The Astrophysical Journal*, Volume 782, Issue 1, article id. 9.
7. Milisavljevic et al. 2013. SN 2012au: A Golden Link between Superluminous Supernovae and Their Lower-luminosity Counterparts. *The Astrophysical Journal Letters*, v. 770, Issue 2, article id. L38.
8. Grier et al. 2013. The Structure of the Broad-line Region in Active Galactic Nuclei. I. Reconstructed Velocity-delay Maps. *The Astrophysical Journal*, v. 764, Issue 1, article id. 47.
9. Grier et al. 2013. Reverberation Mapping Results for Five Seyfert 1 Galaxies. *The Astrophysical Journal*, v. 755, Issue 1, article id. 60.
10. Grier et al. 2012. A Reverberation Lag for the High-ionization Component of the Broad-line Region in the Narrow-line Seyfert 1 Mrk 335. *The Astrophysical Journal Letters*, v. 744, Issue 1, article id. L4.

Teaching and Public Outreach

Guest Lecturer
Astro 130: Black Holes in the Universe, PSU (2017)
Astro 550: High-Energy Astrophysics, PSU (2016)
Astro 485: Introduction to High-Energy Astronomy, PSU (2015)
ASTR 117 Interstellar Astrophysics, Dartmouth College (2015)
Teaching Assistant
PHYS 013 Introductory Physics I, II
ASTR 117 Interstellar Astrophysics
ASTR 002/003 Exploring the Universe
ASTR 001 Solar System General Physics Lab I, II (NTHU, Taiwan)
Public Outreach
Public Lecture at Carnegie Science Center, Pittsburgh, PA (2017)
Public Observing at Dartmouth College (2010-2012, for general public)
Public Lecture at Moultonborough Science Club, NH (2012, for elementary school students)
Public Lecture at NTHU Astronomy Club(2003, for high school students)

Research Grants and Awards

Dartmouth Teaching Fellowship (2009-2012)
NASA Space Grant Graduate PhD Award ($1,500, Dartmouth-New Hampshire, 2014)
William H. Neukom 1964 Institute for Computational Science Graduate Fellowship ($ 27,720, 2014-2015)
Graduate Research Award, Dartmouth College, 2015 (Physics and Astronomy)
Neukom Prize for Outstanding Graduate Research in Computational Science, 2015
XMM-Newton cycle 15 (PI: W. N. Brandt): "Going Beyond COSMOS with the XMM-SERVS Survey of W-CDF-S, XMM-LSS, and ELAIS-S1 "
Hobby-Eberly Telescope LRS2 Shared-risk proposal (PI: J. Trump): "Spatially Resolving the Fossil Record of Black Hole Seeds"
Chandra cycle 18 (PI: R. Hickox): "The Chandra Deep Wide-Field Survey: Completing the new generation of Chandra extragalactic surveys"
XMM-Newton cycle 16 (PI: M. Brightman): "X-ray spectral properties of super-Eddington SDSS quasars"
2016 NASA Group Achievement Award (NuSTAR science working group – extragalactic surveys)

Activities and Service

Member of the X-ray Surveyor Science and Technology Definition Team
(Evolution of Structure and AGN populations Science Working Group).

Member of the LOC, the Black hole Feedback Workshop, Dartmouth College, 2012
Astronomy journal club organizer, Dartmouth College, 2012-2013
Referee, Monthly Notices of the Royal Astronomical Society and the Astrophysical Journal 2014-
Referee of the Astrophysical Journal, 2015-
Memeber of NuSTAR Guest Observer program TAC.

References

- Professor Ryan Hickox
  Dartmouth College, Hanover 03755, USA
  Ryan.C.Hickox@dartmouth.edu +1-603-646-2962
  ⋆ *Professor Hickox was my graduate adviser.*

- Professor W. Niel Brandt
  The Pennsylvania State University, University Park, PA 16801, USA
  niel@astro.psu.edu +1-814-865-3509
  ⋆ *Professor Brandt is my Postdoc adviser.*

- Professor Dave Alexander
  Durham University, County Durham DH1, UK
  d.m.alexander@durham.ac.uk +44-191-3343594
  ⋆ *Professor Alexander is a close collaborator.*

- Professor Alexandra Pope
  University of Massachusetts, Amherst, MA 01003, USA
  pope@pope@astro.umass.edu +1-413-545-1769
  ⋆ *Professor Pope is a close collaborator and she sat on my thesis committee.*