YIMENG TANG

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USTC, No.96, JinZhai Road Baohe District, Hefei, Anhui, 230026, China

EDUCATION

University of Science and Technology of China (USTC)　　　　　　　　　Sept 2017 - Present

School of the Gifted Young, Yan Jici Talent Program in Physics

Bachelor of Science in Astronomy (with **highest honor**, Expected in Jun 2021)

○ Overall GPA: 4.01/4.30 (or 92.53/100, **Ranking 1/30**); Major GPA: 4.10/4.30 (or 95.29/100)
○ GRE Physics: 990/990 (Percentile: 96)

RESEARCH INTERESTS

○ Galaxy formation and evolution
○ Active galactic nuclei
○ Observational cosmology

RESEARCH POSITIONS

Undergraduate Research Fellow, USTC　　　　　　　　　　　　　　　　　Oct 2018 - Present

Undergraduate Research Assistant, University of California, Santa Cruz　　　Jun 2020 - Oct 2020

PUBLICATION

○ New Constraints on the Origin of Surface Brightness Profile Breaks of Disk Galaxies from MaNGA [doi, arXiv]
Y. Tang, Q. Chen, H.-X. Zhang, Z. Lin, G. Chen, Y. Gao, Z. Liang, H. Liu, X. Kong, 2020, ApJ, 897, 79

○ Sub-galactic scaling relations with T_e-based metallicity of low metallicity regions in galaxies: metal-poor gas inflow may have important effects?
Y. Yao, H. Liu, X. Kong, Y. Gao, G. Chen, X. Chen, Z. Liang, Z. Lin, **Y. Tang**, H.-X. Zhang, 2020, submitted to ApJ

RESEARCH EXPERIENCE

○ **Surface Brightness Profile Breaks of Disk Galaxies with MaNGA**

Advisor: Prof. Hong-Xin Zhang, Prof. Xu Kong

Undergraduate Research, USTC　　　　　　　　　　　　　　　　　　　Oct 2018 - Feb 2020

  - To probe the formation mechanisms of surface brightness profile (SBP) breaks of disk galaxies.
  - Constructed a unprecedented large sample of 635 disk galaxies from SSDS-IV MaNGA DR15.
  - Derived SBPs by IRAF, and stellar population property profiles from radially-stacked spectra.
  - Confirmed that down-bending profiles result from both inhibited star formation and stellar migration, and up-bending profiles are mainly caused by an enhancement of star formation intensities at smaller radii. Similar mass-size relations indicated that it is highly unlikely that stellar migration alone can transform surface brightness profiles from down-bending to single-exponential and then to up-bending. Other mechanisms (e.g. spin parameter differences, environmental disturbances, satellite accretion, etc.) were proven statistically not to play a significant role in the formation of breaks.
  - One research paper published as the first author in the Astrophysical Journal.

○ **Assembly History of a Blue Compact Dwarf Galaxy NGC 2915 with MUSE**

Advisor: Prof. Hong-Xin Zhang, Prof. Xu Kong

Undergraduate Research, USTC　　　　　　　　　　　　　　　　　　　Apr 2020 - Present

- To explore star formation activity and assembly history of NGC 2915 with MUSE IFU data, and explain why stars only form in the central region although it has an extremely extended gas disk.
- Identified 33 star clusters from MUSE and HST images and derived their stellar populations and star formation histories by the spectra extracted from MUSE IFU data. Also made 2D maps of various properties of stellar population and gas, and analyzed their spatial variation.
- Found that the main star-forming regions have a large rightward deviation from the core region. Confirmed the positive metallicity gradient of NGC 2915, and the core region and star clusters have the lowest metallicities. Detected gas inflow which may trigger starburst.
- Working in progress as the project leader. One first-author research paper is expected.

○ **Emission Line Properties and Co-evolution of Galaxies and SMBHs of SDSS Galaxies**
Advisor: Prof. Sandra M. Faber, Prof. David C. Koo
Research Internship, University of California, Santa Cruz   Jun 2020 - Present

- To improve the identification of the active galactic nuclei in SDSS galaxies and investigate their role in galaxy evolution. Constructed a sample of $\sim$ 30,000 galaxies from SDSS DR7.
- Analyzed emission lines properties including line luminosities, line ratios and the distributions of galaxies on various emission-line diagnostic diagrams, in order to derive the information of SF and SMBH activities.
- Proposed a new method of emission-line luminosity decomposition to get the contribution of pure AGNs and the real star-formation rates of their host galaxies. Identified 6 groups of galaxies with different emission line properties and AGN statuses that can be evolutionarily linked through a lifecycle.
- One first-author research paper is in preparation.

SELECTED AWARDS & HONORS

Guo Moruo Scholarship ($\sim$ top 2%, **highest honor for undergraduates at USTC**), USTC	2020
National Scholarship ($\sim$ top 2%), Ministry of Education of China	2020&2018
USTC Undergraduate Honorary Rank ($\sim$ top 5%), USTC	2021
NAOC Scholarship, National Astronomical Observatories of Chinese Academy of Sciences	2020
Scholarship of Yan Jici Talent Program ($\sim$ top 10%), USTC	2020&2019
Outstanding Student Scholarship, Gold Prize ($\sim$ top 5%), USTC	2019
Outstanding Freshman Scholarship, USTC	2017
Excellent Graduate, Suzhou High School	2017

SKILLS

Programming: Python, LaTeX, C/C++, Mathematica and Matlab
Software: pPXF, IMFIT, IRAF, SExtractor, VorBin, FSPS and PampelMUSE
Working technique: - Significant experience with MaNGA, MUSE, SDSS, HST and WISE data
                 - Manipulating catalogs, analyzing dataset and visualization
                 - Photometry and spectral feature measurement of galaxies
English: Fluent (TOEFL iBT: Total 102, Reading 30, Listening 22, Speaking 25, Writing 25)

CONFERENCE EXPERIENCES

○ 2020 Annual Conference of the Chinese Astronomical Society, Beijing, China	Oct 2020
○ 2019 Annual Conference of the Chinese Astronomical Society, Delhi, China	Sept 2019
- Poster Presentation: The Origin of Surface Brightness Profile Breaks of Disk Galaxies from MaNGA	

TEACHING EXPERIENCES

Observational Astronomy, Teaching Assistant, USTC	2020 Spring
Astronomical Labs, Teaching Assistant, USTC	2020 Fall