

QING LIU

Curriculum Vitae ◊ updated: Sept 10th 2017
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EDUCATION

University of Science and Technology of China (USTC) *September 2014 - Present*
Undergraduate, Department of Astronomy, School of Physics
Overall GPA: 88.10/100 Junior GPA: 91.53/100 Rank: 3/20

STANDARDIZED TESTS

TOEFL 105 (R30 L26 S22 W27) **IELTS** 7.5 (R8.0 L8.5 S6.0 W6.5)

RESEARCH INTERESTS

Stellar population synthesis (SPS) and analysis
Formation and evolution of galaxies from $z \sim 2.5$ to 0
Star-forming main sequence, radial profiles, 2D patterns
Big data survey, Integral Field Unit (IFU) survey
Statistics, machine learning & computer vision in astronomy

RESEARCH EXPERIENCE

Summer Research, University of California, Santa Cruz (UCSC) *July 2017 - Present*
With Prof. Sandra Faber & Prof. David Koo

- Generating synthetic SED for different **star formation history (SFH)** models
- Computing model **color evolutions** and match them with $0.5 < z < 2.5$ observations from **CANDELS**
- Testing SFH models derived from abundance matching and main sequence with **SED-fitting**
- Fine-tuning models on effects of fluctuations, metallicity and emission lines

Undergraduate Research, USTC *October 2016 - May 2017*
With Prof. Xu Kong & Dr. Enci Wang

- Manipulating SED fitting & emission line fitting on SDSS galaxy spectra
- Extracting resolved quantities (eg. Σ_* , Σ_{SFR}) of nearby galaxies from **MaNGA** data
- Exploring patterns and trends in **spatially-resolved star formation** activities
- Studying dependencies of resolved SFMS in star-forming galaxies on global properties

Summer Research, National Astronomical Observatory (NAOC) *August 2016*
With Prof. You-jun Lu

- Reconstructing synthetic spectra with **Binary Black Hole (BBH)** double-disk accretion models
- Inferring posterior physical properties of BBH in Mrk231 from Keck spectra with **MCMC**
- Simulating BBH dynamical & frictional timescales in separate coalescence stages

Course Project: Image Deconvolution *May 2017*

- Recovering faint exoplanet signals in direct imaging data from Gemini and HST based on Karhunen-Loeve Transformation and High-pass Filtering

CONFERENCE & WORKSHOP

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| CANDELS Team Meeting | August 2017 |
| <i>-Talk: Properties of Stellar Populations in Star-forming Galaxies Based on SED-fitting</i> | |
| Galaxy Formation & Evolution Workshop | August 2017 |
| SDSS-IV MaNGA Team Meeting & MaNGA Data Workshop | November 2016 |
| Annual Conference of Astronomical Society of China | October 2016 |
| NAOC Observational Astrophysics Workshop | July 2016 |
| <i>-Talk: Data Reduction & Calibration: Spectroscopy and Photometry for Time-domain Astronomy</i> | |

PUBLICATION

1. **From Classic to Realistic: Connetting Star Formation Histories and Color Evolutions of $0.5 < z < 2.5$ Galaxies in CANDELS** *first author, in prep*
2. **Resolved Main Sequence in Local Star-forming Galaxies Following Inside-out and Outside-in Mass Assembly Modes** *first author, submitted to MNRAS*
3. What Determines the Local Metallicity of Galaxies: Global Stellar Mass, Local Stellar Mass Surface Density or Star Formation Rate? *Gao et al. 2017, submitted to ApJ*
4. The Properties of Massive Star-forming galaxies with Outside-in Assembly Mode *Wang et al. 2017, ApJ, 844, 144*

SKILLS & TECHNIQUES

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| Computer Languages | Python (>3 yrs) , R , IDL , C , Shell , Mathematica |
| Software | DS9 , IRAF/Pyraf (General) GALAXEV , FSPS , SMpy (SPS) SExtractor , AstroImageJ (Photometry) FAST , STARLIGHT , ppxf, ifuana1 (SED-fitting) scikit-learn/image , astroML , PyTorch (Machine Learning) |
| Statistical Techniques | regression, PCA, factor analysis, hypothetical testing, Bayesian inference, classification, clustering, cross validation and etc. |

APPOINTMENT

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| Research Assistant | November 2015 - Present |
| Key Laboratory for Research in Galaxies and Cosmology, USTC | |
| Teaching Assistant | Fall 2017 |
| AY14204 | Galaxies in the Universe (for 4th-yr UG & 1st-yr PG) |

VISITING

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| Shanghai Normal university (ShNU) | September 2017 |
| University of California, Santa Cruz | June 2017 - September 2017 |
| <i>-Talk: Resolved Main Sequence in Local SFGs Following Two Star-Forming Scenarios</i> | |
| Shanghai Astronomical Observatory (SHAO) | October 2016, June 2014 |
| National Astronomical Observatory (NAOC) | Summer 2016, August 2013 |
| Mauna Kea Observatory, Subaru Telescope | February 2016 |
| Purple Mountain Observatory (PMO) | July 2015 |