# Yueying Ni

yueyingn@andrew.cmu.edu | https://github.com/yueyingn

## EDUCATION

**Carnegie Mellon University**                                                          Pittsburgh, PA
*Ph.D. in Physics*                                                                     *Sep. 2017 – present*

**Fudan University**                                                                  Shanghai, China
*B.S. in Physics*                                                                  *Sep. 2013 – June 2017*

## RESEARCH INTERESTS

**High-$z$ galaxies and quasars**: cosmological hydrodynamic simulations, sub-grid models, constrained Gaussian realizations

**Deep Learning**: Super-resolution simulations

**Alternative dark matter**: astrophysical probes of Fuzzy Dark Matter (FDM) model

## WORKS IN PROGRESS

**Asterix Simulation**
- A new large-volume cosmological hydrodynamic simulation to study the epoch of re-ionization as well as the formation of galaxy and quasars at $z > 2$.
- Provide a training suite for super resolution models

**Super resolution simulation**
- Use super resolution model to generate high-resolution realizations conditioned on low-resolution simulation outputs.
- Apply the technique to hydro-simulations.

**Early quasar growth**
- Use constrained Gaussian realization technique to constrain the properties of the initial density fields for cosmological simulations, and probe the relation between the initial density peaks and the growth of most massive super massive black holes in cosmological simulations.

## PUBLICATIONS

### First Author Papers

**Y. Ni**, T. Di Matteo and Y. Feng, *Not all peaks are created equal: the early growth of Supermassive Black Holes*, arXiv e-prints (2020) arXiv:2012.04714 [2012.04714]

**Y. Ni**, T. Di Matteo, R. Gilli, R. A. C. Croft, Y. Feng and C. Norman, *QSO obscuration at high redshift (z ¿ 7): predictions from the BLUETIDES simulation*, MNRAS **495** (2020) 2135 [1912.03780]

**Y. Ni**, M.-Y. Wang, Y. Feng and T. Di Matteo, *Predictions for the abundance of high-redshift galaxies in a fuzzy dark matter universe*, MNRAS **488** (2019) 5551 [1904.01604]

**Y. Ni**, T. Di Matteo, Y. Feng, R. A. C. Croft and A. Tenneti, *Gas outflows from the z = 7.54 quasar: predictions from the BLUETIDES simulation*, MNRAS **481** (2018) 4877 [1806.00184]

**Y. Ni**, J. Jiang and C. Bambi, *Testing the Kerr metric with the iron line and the KRZ parametrization*, J. Cosmology Astropart. Phys. **2016** (2016) 014 [1607.04893]

**Y. Ni**, M. Zhou, A. Cárdenas-Avendaño, C. Bambi, C. A. R. Herdeiro and E. Radu, *Iron Kα line of Kerr black holes with scalar hair*, J. Cosmology Astropart. Phys. **2016** (2016) 049 [1606.04654]

### Second Author Papers

Y. Li, **Y. Ni**, R. A. C. Croft, T. Di Matteo, S. Bird and Y. Feng, *AI-assisted super-resolution cosmological simulations*, arXiv e-prints (2020) arXiv:2010.06608 [2010.06608]

M. A. Marshall, **Y. Ni**, T. Di Matteo, J. S. B. Wyithe, S. Wilkins, R. A. C. Croft et al., *The host galaxies of z = 7 quasars: predictions from the BLUETIDES simulation*, MNRAS **499** (2020) 3819 [1912.03428]

K.-W. Huang, **Y. Ni**, Y. Feng and T. Di Matteo, *The early growth of supermassive black holes in cosmological hydrodynamic simulations with constrained Gaussian realizations*, MNRAS **496** (2020) 1 [1906.00242]

## Selected Talks

**BlueWater Symposium** June 2019
*Talk: BlueTides simulation: first galaxies and QSOs at the cosmic dawn* *Sunriver,OR*

**Big eye in the early universe** January 2019
*Talk: High-z quasar outflows and obscuration* *Los Angeles,CA*