

# Doosoo Yoon

## Curriculum Vitae

### Contact Information

CAS PIFI Postdoctoral Fellow  
Shanghai Astronomical Observatory  
80 Nandan Road  
Shanghai 200030, China

+86-150-0094-7071  
yoon@shao.ac.cn  
<http://center.shao.ac.cn/yoon>

### Education

PhD, Astronomy, University of Wisconsin-Madison, 2015

- Thesis Topic: *“Headwinds and Bow shocks: The Interaction of Relativistic Outflows from Compact Objects with Interstellar Matter”*
- Supervisor: Prof. Sebastian Heinz

MS, Physics and Astronomy, Seoul National University, 2008

- Thesis Topic: *“Evolution of Self-gravitating Gaseous Disks in Barred Galaxies”*
- Supervisor: Prof. Woong-Tae Kim

BA, Physics and Astronomy, Seoul National University, 2006

- Thesis Topic: *“Growth of Self-gravitating Structures in Models of Galactic Gas Disk”*
- Supervisor: Prof. Woong-Tae Kim

### Research Experience

**Research Assistant** - University of Wisconsin-Madison, 2009-Present

- performed 3 dimensional hydrodynamic simulations to study the interaction of a microquasar jet or a pulsar wind with interstellar medium
- worked with FLASH code which is a modular, parallel, and an adaptive mesh refinement algorithm
- programmed with Fortran, and analysed/visualized with IDL and Python
- run the simulations on MEDUSA (Department Cluster; assigned to 192 processors), Advanced Computing Infrastructure (UW-Madison; assigned to 400 processors), and Extreme Science and Engineering Discovery Environment (NSF; assigned to 1 million CPU-Hours)

Supervisor: Prof. Sebastian Heinz

**Research Assistant** - Seoul National University, 2006-2009

- performed 2.5 dimensional hydrodynamic simulations to investigate the dynamics of gaseous disk in barred spiral galaxy
- worked with both grid based codes including ZEUS, TVD, CMHOG and a smoothed-particle code, GADGET
- programmed with Fortran, C, C++, and analysed with IDL

Supervisor: Prof. Woong-Tae Kim

### Teaching Experience

**Teaching Assistant** - University of Wisconsin-Madison, 2011

Astronomy 103 *“The Evolving Universe”* (Fall 2011)

- led 6 discuss sections per week, and graded quizzes

**Teaching Assistant** - Seoul National University, 2007-2009

Astronomy 046.006 *“Human and Universe”* (Spring 2007), Astronomy 046.007 *“The Evolving Universe”* (Spring 2009)

- aided introductory astronomy laboratory exercises, observing sessions and graded exams and reports

## Honors & Awards

- Awarded CAS PIFI Fellowship starting from Jan., 2016, Chinese Academic of Science
- Awarded allocation of high-end computational resources in the XSEDE (1 million cpu-hours, TG-AST140042, PI: Sebastian Heinz)
- Awarded Vilas Conference Presentation Grant: Fall 2014, University of Wisconsin-Madison
- Awarded the AAS International Travel Grant: Summer 2014, AAS
- Awarded Vilas Conference Presentation Grant: Spring 2014, University of Wisconsin-Madison

## Publications

**Yoon, D.**, Zdziarski, A. A., & Heinz, S. “*Formation of recollimation shocks in jets of high-mass X-ray binaries*” (2016) MNRAS, Vol.456, Issue 4, p.3638.

**Yoon, D.**, Heinz, S. “*Global Simulations of the Interaction of Microquasar Jets with a Stellar wind in High-Mass X-ray Binaries*” (2015) ApJ, Vol.801, Issue 1, P.55.

Morsony, B., Gracey, B.T., Workman, J.C., **Yoon, D.** “*G2 and Sgr A\*: A Cosmic Fizzle at The Galactic Center*” (2015) submitted to MNRAS (arXiv: 1508.00384)

Kim, W., Seo, W., Stone, J.M., **Yoon, D.**, Teuben, P.J. “*Central Regions of Barred Galaxies: Two-dimensional Non-self-gravitating Hydrodynamic Simulations*” (2012) ApJ, Vol.747, Issue 1, p. 60.

**Yoon, D.**, Morsony, B., Heinz, S., Wiersema, K., Fender, R.P., Russell, D., Sunyaev, R. “*Jet Trails and Mach Cones: The Interaction of Microquasars with ISM*” (2011) ApJ, Vol.742, Issue 1, p. 25.

## Talks & Posters

**Yoon, D.**, Heinz, S. “Global Simulations of the Interaction of Microquasar Jets with a Stellar wind in High-Mass X-ray Binaries” Poster Session, AAS Meeting; Seattle, WA; January, 2015

**Yoon, D.**, Heinz, S. “Global Simulations of the Interaction of Microquasar Jets with a Stellar wind in High-Mass X-ray Binaries” Poster Session, Chandra Symposium; Boston, MA; November, 2014

**Yoon, D.**, Heinz, S. “The effects of Ambient Density Discontinuity on the Evolution of Bow-shock Pulsar Wind Nebula” Poster Session, HEAD meeting; Chicago, IL; August, 2014

**Yoon, D.**, Heinz, S. “The Interaction of Microquasar Jets with a Stellar Wind in High-Mass X-ray Binaries” Talk, Asia-Pacific Regional IAU Meeting, S. Korea; August, 2014

**Yoon, D.**, Heinz, S. “The Dynamics of Microquasars Jets in Circum-binary Environment of HMXBs” Poster Session, AAS Meeting; Washington D.C. 223; January, 2014