

# Alissa S. Bans, Ph.D.

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## EDUCATION

- Ph.D.**      **University of Chicago**      Dec 2013  
Astronomy and Astrophysics  
*Advisor:* Dr. Arieih Königl  
*Thesis:* “Type I Planet Migration Under the Influence of Disk-threading Magnetic Fields”
- B.S.**      **University of Minnesota, Twin Cities**      July 2007  
Astrophysics (Summa Cum Laude)  
Mathematics (High Distinction)

## HONORS & AWARDS

- Balzan Junior Research Fellow, Oxford University      2015  
NASA Earth and Space Science Fellowship (NESSF)      2009-2011, 2012-2013  
University of Chicago: Brinson Foundation Pre-doctoral Outreach Fellowship      2011-2012  
University of Chicago: Schramm Fellowship      2007-2008  
AAS Chambliss Student Achievement Award: Honorable Mention      2006  
University of Minnesota: CBS Scholarship      2004-2006  
University of Minnesota: Iron Range Scholarship      2003-2004

## RESEARCH POSITIONS

- Postdoctoral Researcher, Adler Planetarium**      2013 - present
- Data analysis and active involvement as a science team member of Zooniverse citizen science project Disk Detective, analytic and numerical analysis of low-mass planet migration in disks with large-scale fields, modeling the observational properties of high-luminosity Herbig Be objects
- Graduate Student, University of Chicago**      2007-2013
- Developing and implementing Monte Carlo radiative transfer techniques to model the observational properties of magnetically driven outflows in Herbig Ae objects, exploring the influence of magnetic fields on disk-driven planet migration, multi-wavelength data analysis & observations of a strongly lensed luminous infrared galaxy
- Undergraduate Research Assistant, University of Minnesota Twin Cities**      2007
- Simulating spectral energy output and other observational properties of Eta Carinae
- REU Student, Maria Mitchell Observatory**      2006
- Studying molecule formation in the clouds surrounding Eta Carinae using both steady state chemistry models and publically available HST data

## PUBLICATIONS

“Disk Detective: Finding Circumstellar Disk Candidates with WISE via crowdsourcing” Kuchner, M., Silverberg, S., **Bans, A.**, et al., *in prep*

“Type I Planet Migration in a Magnetized Disk. II. Effect of Vertical Angular Momentum Transport” **Bans, A.**, Königl, A., & Uribe, A., 2015, *The Astrophysical Journal*, 802, 55

“Type I Planet Migration in a Magnetized Disk. I. Effect of Large-Scale Vertical and Azimuthal Components” Uribe, A., **Bans, A.**, & Königl, A., 2015, *The Astrophysical Journal*, 802, 54

“Type I planet migration under the influence of disk-threading magnetic fields”, **Bans,A.**, 2013,PhDT, 342

“A Disk-Wind Model for the Near-Infrared Excess Emission in Protostars”, **Bans, A.**, Königl, A. 2012,*The Astrophysical Journal*, 758, 100

“SGAS 143845.1+145407: A Big, Cool Starburst at Redshift 0.816”, Gladders, M.D., Rigby, J.R., Sharon, K., Wuyts, E., Abramson, L.E., Dahle, H., Persson, S.E., Monson, A.J., Kelson, D.D., Benford, D.J., Murphy, D., Bayliss, M.B., Finkelstein, K.D., Koester, B.P., **Bans, A.**, Baxter, E.J., Helsby, J.E., 2013, *ApJ*, 764, 177

“Possible Detection of HCl in Eta Carinae -513 km/s Ejected Component”, **Bans,A.**, 2008, *JYI*, 18,4

## TALKS & POSTERS

“Magnetically-Driven Outflows, Planet Migration, and Citizen Science”, **Bans, A.**, NASA Goddard Extrasolar Planets Seminar, NASA Goddard, August 2015

“Magnetically-Driven Outflows, Planet Migration, and Citizen Science”, **Bans, A.**, The STScI Star and Planet Formation Seminar Series, STScI, August 2015

“Low-Mass Planet Migration in Disks with Large-scale Magnetic Fields”, **Bans, A.**, Physics Colloquium, Indiana University Northwest, March 2015

“Finding Thousands of New Disks, and Why I Think That's Cool”, **Bans, A.**, Zoominar, Oxford University, February 2015

“A Disk-Wind Model for the Near-Infrared Excess Emission in Protostars “, **Bans, A.**, Astronomy Journal Club, Northwestern University, October 2012

“DiskDetective.org: The First 1,000,000 Classifications”, Kuchner, M. J.; Silverberg, S.; **Bans, A.**; and the Disk Detective Team, AAS Meeting, Winter 2015

“A Disk-Wind Model for the Near-Infrared Excess Emission in Protostars”, **Bans, A.**, *Star Formation and the Interstellar Medium: 35 Years Later*, University of California Berkeley, CA, September 2012

“Exploring The Disk-Planet Connection in the Context of Magnetic Fields”, **Bans, A.**, *Gordon Research Conference: Origin of the Solar System*, Mt. Holyoke College, MA, July 2011

“Observational Diagnostics of Protoplanetary Disks with Centrifugally Driven Disk Winds”, **Bans, A.**; *Transport Processes and Accretion in YSOs*, Ringberg Castle, Kreuth, Germany February 2011

“On the Chemistry of Circumstellar Disk Around MWC 349A”, Lagergren, Krister, **Bans, A.**; Strelitski, V., AAS Meeting Winter 2012

“Steady-State Modeling and Possible Detection of HCl in Eta Carinae’s -513 km/s Ejecta”, **Bans, A.**; AAS Meeting Winter 2006

## TEACHING & OUTREACH

### College Teaching

#### **Adjunct Professor**

School of the Art Institute of Chicago, *Science 3210: Astronomy* 2015 - present

- Taught two general astronomy classes for art students, developed all course materials with a strong focus on modern research and interactive science experiences

#### **Adjunct Professor**

2015

University of Indiana Northwest, *Astronomy 105: Stars and Galaxies*

- Taught one 3 hour class per week, also planned and developed all lectures, in class lab activities, and all course materials. Student reviews at the end of the course were highly positive, and are available upon request

#### **Lab instructor & TA**

2007

University of Chicago, *Stellar Astronomy and Astrophysics, The Origin of the Universe, and Evolution of the Universe*

- Planned and led 1 hour discussion sections also led weekly lab

### Public Outreach

#### **Informal Outreach at Adler Planetarium**

2010 - present

- Astronomy Conversations presenter at Adler’s Space Visualization Laboratory
- Talking to visitors on the museum floor, doing interactive tutorials of citizen science, answering audience questions after planetarium shows
- Leading public viewing nights

#### **Public Lecturer**

2014 - present

- Giving public lectures on astrobiology and exoplanets to groups of Senior Citizens

#### **Public Lecturer at Maria Mitchell Observatory**

2006

- Giving tours of the Observatory, planning, running, and leading nightly public classes and sky shows

### K-12 Education and Outreach

#### **Director and head mentor of Adler Astro-Journalists**

2011 - present

- Developed, implemented, and currently directing a teen-writing internship as part of the Adler Planetarium’s Youth Programs (<http://adlerastrojournalists.wordpress.com/>)

#### **Co-Instructor for KICP’s Space Explorers Program**

2008-2013

- Developed curricula and taught day-long labs during intensive weeklong summer and winter science camps for K-12 students at Yerkes Observatory

**Lead Instructor for KICP's Space Explorers Program** 2008-2009

- Created, documented, and taught a yearlong weekly astronomy course to local area K-12 students, *2008-2009*

**K-12 STEM Mentoring** 2013 - present

- Mentor and workshop leader for Expand Your Horizons (EYH) Chicago ( *2013,2014*)
- Mentor and workshop leader for Adler's Girls Do Hack day (*2013, 2014, 2015*)

**Guest Instructor Air Force Academy High School** 2011-2012

- Designed and taught astrobiology-themed classes and mentored and advised AFAHS student on astrobiology-themed CPS Science Fair projects

### **Education & Outreach Programming**

**Workshop Developer and Leader for KICP Summer School on Education and Outreach**

- Led workshops and supervised internships for graduate students on using Worldwide Telescope for both K-12 and college instruction and also informal outreach

### **Advising Experience**

**Disk Detective Citizen Science Project** 2015 - present

- Co-advisor for Disk Detective graduate student Steven Silverberg from University of Oklahoma

**Maria Mitchell Observatory REU program** 2011

- Served as a co-advisor to an undergraduate summer REU student Krister Lagergren from University of Virginia

### **Other**

**Volunteer Tutor for the Upward Bound Program** 2009-2011

**Chicago Public School Science Fair Judge** 2008, 2009, 2010

### **ACADEMIC SERVICE**

Member of Astronomy Graduate Admissions committee at University of Chicago 2013

Student Representative to the Faculty at University of Chicago 2009-2011