Jacob B. Simon

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RESEARCH INTERESTS

Planetary Science: Small bodies, Planetesimal Formation, Planet Formation
Exoplanets: Formation, Evolution, Dynamics
Planet Forming Disks: Planet Formation, Disk Evolution, Accretion Processes
Compact Objects: Accretion Physics, MHD Turbulence
Computational Astrophysics: Magnetohydrodynamics, Godunov Schemes, Grid Codes, Particle-Mesh Methods

EDUCATION

University of Virginia, Charlottesville, VA
Ph.D., Astrophysics — August 2010
M.S., Astronomy — May 2006

University of Illinois, Champaign-Urbana, IL
B.S., Physics — May 2004
Minors in Astronomy & Mathematics
Magna Cum Laude
Highest Distinction in the Curriculum

POSITIONS

– Assistant Professor, Iowa State University — Fall 2019-present
– Senior Research Associate, University of Colorado & Visiting Scientist at Southwest Research Institute — 2016-2019
– NASA Sagan Fellow, Southwest Research Institute — 2013-2016
– JILA Postdoctoral Research Fellow — 2010-2013
– NESSF Graduate Research Fellow, University of Virginia — 2008-2010
– Graduate Research Assistant, University of Virginia — 2004-2008
– Undergraduate Research Assistant, University of Illinois — 2000-2004

HONORS, AWARDS, GRANTS

Honors & Awards:
– Scialog Fellow — 2023
– Visiting Scholar, UCSB Kavli Institute — Feb-March 2017
– NASA Sagan Fellow — 2013-2016
– NASA Earth and Space Science Fellow — 2008-2010
– Virginia Space Grant Consortium Fellow — 2008-2010
– University of Illinois James Scholar — 2000-2004
– University of Illinois Dean's List — 2000-2004
– National Society of Collegiate Scholars
– Phi Beta Kappa Society

Research Grants:
– PI (with Jeonghoon Lim as student investigator): Future Investigators in NASA Earth and Space Science and Technology (FINESST) 2022 "Formation of Kuiper Belt Objects in the Protosolar Nebula"

(Award amount: $149,905)
– PI: NASA Exoplanets Research Program 2021 "Early Planet Formation in Young, Protostellar Disks"
(Award amount: $447,925)
– Institutional PI, Co-I, and Head of ISU Node: NASA TCAN 2020 "Dynamical instabilities in the aid of planet formation in circumstellar disks "
(Award amount: $253,300 to ISU; $1,306,487 total)
– PI: NASA Emerging Worlds 2018 "Planetesimal Formation in the Protosolar Disk: The Influence of Turbulence"
(Award amount: $394,000)
– PI: NASA Emerging Worlds 2017 "Pebbles to Planets: The Role of Pressure Traps"
(Award amount: $484,000)
– Co-I: NASA ATP 2017 "Magnetic Fields and Self-Gravity in Early Protostellar Disks"
(Award amount: $453,000)
– Co-I: NASA TCAN 2017 "Origin of the Giant Planet Dichotomy: Multi-scale Modeling of Planetary Envelope Accretion"
(Award amount: $1,497,749)

Computing Grants:
– PI: ACCESS Supercomp. Allocation, 2022-2023, 29 Million CPU-Hours
– PI: XSEDE Supercomp. Allocation, 2021-2022, 29 Million CPU-Hours
– PI: XSEDE Supercomp. Allocation, 2020-2021, 28.7 Million CPU-Hours
– PI: XSEDE Supercomp. Allocation, 2019-2020, 13 Million CPU-Hours
– PI: XSEDE Supercomp. Allocation, 2018, 24.5 Million CPU-Hours
– PI: XSEDE Supercomp. Allocation, 2016-17, 2.3 Million CPU-Hours
– PI: XSEDE Supercomp. Allocation, 2015-16, 10.4 Million CPU-Hours
– PI: XSEDE Supercomp. Allocation, 2014-15, 3.1 Million CPU-Hours
– PI: XSEDE Supercomp. Allocation, 2013-14, 15.3 Million CPU-Hours
– PI: XSEDE Supercomp. Allocation, 2012-13, 19.1 Million CPU-Hours
– PI: Janus Supercomputing Allocation, 2014, 2.85 Million CPU-Hours
– PI: Janus Supercomputing Allocation, 2013, 5.2 Million CPU-Hours
– Co-I: XSEDE Supercomputing Allocation, 2011-12, 6.1 Million CPU-Hours
– Co-I: XSEDE Supercomputing Allocation, 2010-11, 9 Million CPU-Hours

Observing Grants:
– Co-I: ALMA Cycle 7, "Protoplanetary Disk Magnetic Fields from the Zeeman Effect"
– Co-I: ALMA Cycle 6, "Constraining the Vertical and Radial Structure of the Turb ulence around DM Tau"
– Co-I: ALMA Cycle 2, " A 3-Dimensional View of Protoplanetary Disk Turbulence"

RESEARCH ADVISING

Current:

– Daniel Carrera (Postdoctoral Associate)	2019-present
– Abigail Davenport (Ph.D. student)	2022-present
– Jeonghoon Lim (Ph.D. student)	2020-present
– David Rea (Ph.D. student)	2019-present
– Olivia Brouillette (Undergraduate student)	2022-present

Past:

– Sayantan Auddy (Postdoctoral Associate)	2020-2022
– Matthew Small (Masters student)	2019-2022
– Drew Thomas (Undergraduate student)	2019-2021
– Lia Hankla (Ph.D. student)	2018-2019

– Charles Abod (Undergraduate student) 2017-2019
– Daniel Gole (Ph.D. student) 2014-2019
– Greg Salvesen (Ph.D. student) 2010-2016

TEACHING EXPERIENCE

Iowa State University
– Stars, Galaxies, and Cosmology, Intro. for Non-majors 2020-present
– Computational Physics, Graduate Level 2020-present

University of Colorado
– Introduction to Astrophysics, Guest Lecturer Fall 2018
– Origin and Evolution of Planetary Systems, Guest Lecturer Fall 2016, 2018
– Radiative and Dynamical Processes Seminar Fall 2013
– High Energy Astrophysics Seminar Spring 2011

Head Teaching Assistant, University of Virginia
– Undergraduate Astronomy for Majors Spring 2009

Teaching Assistant, University of Virginia
– Introduction to the Sky and Solar System 2004-2006
– Introduction to the Stars, Galaxies, and the Universe 2004-2006
– Introduction to Astronomical Observation Spring 2005
– Archeo-Astronomy Fall 2004

OUTREACH

– Scientific Consultant, PNAS, News Feature: " 'Celestial snowman' starts to reveal its secrets" 2019
– Scientific Consultant, Science Magazine Article "New Horizons inspects a distant time capsule" 2019
– Scientific Consultant, NHK Cosmic Front NEXT TV Series "Reaching the edge of the Solar System" 2019
– Simulations featured in planetarium show "Incoming!" by the California Academy of Sciences 2016
– University of Virginia Astronomy Public Night Tour Guide 2004-2010
– Lecturer: Jefferson Institute for Lifelong Learning 2007
– KidVention Program: Solar system science for grade school children 2006

COMPUTING

Numerical Methods:
– Numerical hydro- and Magnetohydrodynamics
– Numerical simulations of planetesimal formation
– Grid codes: Finite Differencing, Finite Volume, Godunov schemes
– Particle-Mesh methods & Coupled Hydro-Particle integration
– Numerical solutions to Poisson's equation

High Performance Computing:
– MPI parallelization up to 100,000 cores
– Scalability and benchmarking up to 100,000 cores
– Experience with numerous national level (e.g., NSF XSEDE) supercomputers
– Experience with University-scale computing clusters

Codes: Athena++, Athena, PLUTO, RADMC-3D, LIME

Languages: Python, IDL, Fortran 90/95, C

PROFESSIONAL SERVICES

Referee for ApJ	
Referee for MNRAS	
Referee for Icarus	
Referee for Science	
Review Panelist for NASA	
Review Panelist for NSF	
Review Panelist for XSEDE	
CASA/JILA Lunch Seminar Chair	2011-2013
University of Virginia Astronomy Journal Club Founder	2008
University of Virginia Astronomy Graduate Representative	2007-2008
University of Virginia Astronomy Computing Policy Committee	2006-2010

MEMBERSHIPS

American Astronomical Society
National Society of Collegiate Scholars
Phi Beta Kappa Society

Publications Jacob B. Simon

Book Chapters and Reviews

- **Simon, Jacob B.**; Blum, Jürgen; Birnstiel, Til; Nesvorný, David; "Comets and Planetesimal Formation", accepted and in press for publication in Comets III book, arXiv:2212.04509
- Lesur, Geoffroy; Flock, Mario; Ercolano, Barbara; ... **Simon, Jacob B.**; Turner, Neal; Umurhan, Orkan M.; Youdin, Andrew N.; "Hydro-, Magnetohydro-, and Dust-Gas Dynamics of Protoplanetary Disks", accepted and in press for Protostars and Planets VII book.

Journal Articles

- Carrera, Daniel, **Simon, Jacob B.**, "The Streaming Instability Cannot Form Planetesimals from Millimeter-size Grains in Pressure Bumps", 2022, ApJ Letters, 933, L10.
- Carrera, Daniel, Thomas, Andrew J., **Simon, Jacob B.**, Small, Matthew A., Kretke, Katherine A., Klahr, Hubert, "Resilience of Planetesimal Formation in Weakly-Reinforced Pressure Bumps", 2022, ApJ, 927, 52.
- Auddy, Sayantan, Dey, Ramit, Lin, Min-Kai, Carrera, Daniel, **Simon, Jacob B.**, "Using Bayesian Deep Learning to infer Planet Mass from Gaps in Protoplanetary Disks", 2022, ApJ, 936, 93-103.
- Nesvorný, David, Li, Rixin, **Simon, Jacob B.**, Youdin, Andrew N., Richardson, Derek C., Marschall, Raphael, Grundy, William M. "Binary Planetesimal Formation from Gravitationally Collapsing Pebble Clouds", 2021, PSJ, 2, 27-47.
- Disk Dynamics Collaboration: Armitage, Philip J., Bae, Jaehan, ... **Simon, Jacob B.**,... "Visualizing the Kinematics of Planet Formation", arXiv:2009.04345
- Carrera, Daniel, **Simon, Jacob B.**, Li, Rixin, Kretke, Katherine A., Klahr, Hubert "Protoplanetary Disk Rings as Sites for Planetesimal Formation", 2021, AJ, 161, 96-113
- Gole, Daniel A., **Simon, Jacob B.**, Li, Rixin, Youdin, Andrew N., Armitage, Philip J., "Turbulence Regulates the Rate of Planetesimal Formation via Gravitational Collapse", 2020, ApJ, 904, 132-146
- Flaherty, Kevin M., Hughes, A. Meredith, **Simon, Jacob B.**, Qi, Chunhua, Bai, Xue-Ning, Bulatek, Alyssa, Andrews, Sean M., Wilner, David J., Kóspál, Ágnes, "Measuring turbulent motion in planet-forming disks with ALMA: A detection around DM Tau and non-detections around MWC 480 and V4046 Sgr", 2020, ApJ, 895, 109-126
- Fu, Roger R., Kehayias, Pauli, Weiss, Benjamin P., Schrader, Devin L., Bai, Xue-Ning, **Simon, Jacob B.**, "Weak Magnetic Fields in the Outer Solar Nebula Recorded in CR Chondrites", 2020, JGR, 125, 5, e06260
- Mishra, Bhupendra, Begelman, Mitchell C., Armitage, Philip J., **Simon, Jacob B.** "Strongly magnetized accretion disks: structure and accretion from global magnetohydrodynamic simulations", 2020 MNRAS, 492, 1855-1868
- Li, Rixin, Youdin, Andrew N., **Simon, Jacob B.,** "Demographics of Planetesimals Formed by the Streaming Instability", 2019, ApJ, 885, 69-85
- Abod, Charles P., **Simon, Jacob B.**, Li, Rixin, Armitage, Philip J., Youdin, Andrew N., Kretke, Katherine A. "The Mass and Size Distribution of Planetesimals Formed by the Streaming Instability. II. The Effect of the Radial Pressure Gradient", 2019, ApJ, 883, 192-208

- Nesvorný, David, Li, Rixin, Youdin, Andrew N., **Simon, Jacob B.**, Grundy, William M. "Trans-Neptunian Binary Evidence for Planetesimal Formation by the Streaming Instability", 2019, Nature Astronomy, Vol. 3, 808-812
- Gole, Daniel A., **Simon, Jacob B.** "The Nature of Turbulence in the Outer Regions of Protoplanetary Disks", 2018, ApJ, 869, 84-95
- **Simon, Jacob B.,** Bai, Xue-Ning, Flaherty, Kevin M., Hughes, A. Meredith "Origin of Weak Turbulence in the Outer Regions of Protoplanetary Disks", 2018, ApJ, 865, 10-20
- Li, Rixin, Youdin, Andrew N., **Simon, Jacob B.,** "On the Numerical Robustness of the Streaming Instability: Particle Concentration and Gas Dynamics in Protoplanetary Disks", 2018, ApJ, 862, 14-30
- Flaherty, Kevin M., Hughes, A. Meredith, Teague, Richard, **Simon, Jacob B.**, Andrews, Sean M., Wilner, David J. "Turbulence in the TW Hya Disk", 2018, ApJ, 856, 117-129
- **Simon, Jacob B.,** Armitage, Philip J., Youdin, Andrew N., Li, Rixin "Evidence for Universality in the Initial Planetesimal Mass Function", 2017, ApJL, 847, L12-L17
- Flaherty, Kevin M., Hughes, A. Meredith, Rose, Sanaea, **Simon, Jacob B.**, Qi, Chunhua, Rosenfeld, Katherine A., Andrews, Sean M., Kóspál, Ágnes, Wilner, David J., Chiang, Eugene, Armitage, Philip J., Bai, Xue-Ning "A Three-Dimensional View of Turbulence: Constraints on Turbulent Motions in the HD 163296 Protoplanetary Disk using DCO^+", 2017, ApJ, 843, 150-169
- Armitage, Philip J., Eisner, Josh A., **Simon, Jacob B.** "Prompt Planetesimal Formation Beyond the Snow Line", 2016, ApJL, 828, L2-L6
- **Simon, Jacob B.** "The Influence of Magnetic Field Geometry on the Formation of Close-In Exoplanets", 2016, ApJL, 827, L37-L41
- Gole, Daniel A., **Simon, Jacob B.**, Lubow, Stephen H., Armitage, Philip J., "Turbulence, Transport and Waves in Ohmic Dead Zones", 2016, ApJ, 826, 18-30
- **Simon, Jacob B.,** Armitage, Philip J., Li, Rixin, Youdin, Andrew N. "The Mass and Size Distribution of Planetesimals Formed by the Streaming Instability. I. The Role of Self-Gravity", 2016, ApJ, 822, 55-72
- Salvesen, Greg, Armitage, Philip J., **Simon, Jacob B.,** Begelman, Mitchell C., "Strongly magnetized accretion discs require poloidal flux", 2016, MNRAS, 460, 3488-3493
- Salvesen, Greg, **Simon, Jacob B.,** Armitage, Philip J., Begelman, Mitchell C., "Accretion disc dynamo activity in local simulations spanning weak-to-strong net vertical magnetic flux regimes", 2016, MNRAS, 457, 857-874
- **Simon, Jacob B.,** Lesur, Geoffroy, Kunz, Matthew W., Armitage, Philip J., "Magnetically driven accretion in protoplanetary discs", 2015, MNRAS, 454, 1117-1131
- Flaherty, Kevin M., Hughes, A. Meredith, Rosenfeld, Katherine A., Andrews, Sean M., Chiang, Eugene, **Simon, Jacob B.**, Kerzner, Skylar, Wilner, David J. "Weak Turbulence in the HD 163296 Protoplanetary Disk Revealed by ALMA CO Observations", 2015, ApJ, 813, 99-119
- **Simon, Jacob B.,** Hughes, A. Meredith, Flaherty, Kevin M., Bai, Xue-Ning, Armitage, Philip J., "Signatures of MRI-Driven Turbulence in Protoplanetary Disks: Predictions for ALMA Observations", 2015, ApJ, 808, 180-199
- **Simon, Jacob B.,** Armitage, Philip J., "Efficiency of Particle Trapping in the Outer Regions of Protoplanetary Disks", 2014, ApJ, 784, 15-21
- Salvesen, Greg, Beckwith, Kris, **Simon, Jacob B.**, O'Neill, Sean M., Begelman, Mitchell C., "Quantifying energetics and dissipation in magnetohydrodynamic turbulence", 2014, MNRAS, 438, 1355-1376

- Armitage, Philip J., **Simon, Jacob B.**, Martin, Rebecca G., "Two Timescale Dispersal of Magnetized Protoplanetary Disks", 2013, ApJL, 778, L14-L18
- **Simon, Jacob B.**, Bai, Xue-Ning, Armitage, Philip J., Stone, James M., Beckwith, Kris, "Turbulence In the Outer Regions of Protoplanetary Disks. II. Strong Accretion Driven by a Vertical Magnetic Field", 2013, ApJ, 775, 73-85
- **Simon, Jacob B.**, Bai, Xue-Ning, Stone, James M., Armitage, Philip J., Beckwith, Kris, "Turbulence In the Outer Regions of Protoplanetary Disks. I. Weak Accretion with No Vertical Magnetic Flux", 2013, ApJ, 764, 66-81
- Forgan, Duncan, Armitage, Philip J., **Simon, Jacob B.**, "Turbulent Linewidths as a Diagnostic of Self-Gravity in Protostellar Discs", 2012, MNRAS 426, 2419-2426
- **Simon, Jacob B.**, Beckwith, Kris, Armitage, Philip J., "Emergent Mesoscale Phenomena in Magnetized Accretion Disc Turbulence", 2012, MNRAS, 422, 2685-2700
- **Simon, Jacob B.**, Armitage, Philip J., Beckwith, Kris, "Turbulent Linewidths in Protoplanetary Disks: Predictions from Numerical Simulations", 2011, ApJ, 743, 17-25
- Beckwith, Kris, Armitage, Philip J., **Simon, Jacob B.**, "Turbulence in Global Simulations of Magnetized Thin Accretion Disks", 2011, MNRAS, 416, 361-382
- **Simon, Jacob B.**, Hawley, John F., Beckwith, Kris, "Resistivity-driven State Changes in Vertically Stratified Accretion Disks", 2011, ApJ, 730, 94-113
- Zhu, Zhaohuan, Hartmann, Lee, Gammie, Charles F., Book, Laura G., **Simon, Jacob B.**, Engelhard, Eric, "Long-term Evolution of Protostellar and Protoplanetary Disks. I. Outbursts", 2010, ApJ, 713, 1134-1142
- **Simon, Jacob B.**, Hawley, John F., "Viscous and Resistive Effects on the MRI with a Net Toroidal Field", 2009, ApJ, 707, 833-843
- **Simon, Jacob B.**, Hawley, John F., Beckwith, Kris, "Simulations of Magnetorotational Turbulence with a Higher-Order Godunov Scheme", 2009, ApJ, 690, 974-997
- Guan, Xiaoyue, Gammie, Charles F., **Simon, Jacob B.**, Johnson, Bryan M.,"Locality of MHD Turbulence in Isothermal Disks", 2009, ApJ, 694, 1010-1018
- Stone, James M., Gardiner, Thomas A., Teuben, Peter, Hawley, John F., **Simon, Jacob B.**, "Athena: A New Code for Astrophysical MHD", 2008, ApJS, 178, 137-177

Invited Talks

- "Planetesimal Formation in Circumstellar Disks", Pabna University of Science and Technology, International Webinar, February 1, 2023.
- "Planetesimal Formation in Circumstellar Disks", Western Illinois University, Physics Colloquium, Nov 3, 2022.
- "The Birth of Planetesimals in Planet-forming Disks", McMaster University, Astronomy Seminar, Sept 9, 2022.
- "The Formation of Binary Planetesimals from the Streaming Instability", Lucy Team Meeting, Southwest Research Institute (SwRI), Boulder, CO, May 26, 2022.
- "The Formation of Planetesimals by the Streaming Instability", Division of Dynamical Astronomy meeting, Flatiron Institute, New York, NY, April 25, 2022.
- "Studies at the Frontier of Planetesimal Formation", University of Copenhagen, Planet Formation Group, September 22, 2021.
- "Accretion and Planet Formation in Protoplanetary Disks", University of Colorado APS Colloquium, March 15, 2021.
- "The Environments of Black Holes and Planets", Iowa State University Retirees Association, September 10, 2020.
- "Accretion Disks: From Black Holes to Planets", University of Toledo Physics & Astronomy Colloquium, April 9, 2020.
- "Accretion Disks: From Black Holes to Planets", Montana State University Physics Colloquium, October 4, 2019.
- "The Size-Frequency Distribution of Planetesimals: Results from Numerical Simulations", Main Belt Conference, Villasimius, Italy, June 4, 2019.
- "Numerical Simulations of Planetesimal Formation", Theoretical and Computational Challenges in Planet Formation, Flatiron Institute, New York, NY, May 21, 2019.
- "Formation of Oblate Planetesimals: Implications for MU69", New Horizons Science Plenary Meeting, Southwest Research Institute (SwRI), Boulder, CO, May 9, 2019.
- "Planetesimal Formation and the Universality of the Initial Mass Function", Athena++ User Workshop, Las Vegas, NV, March 22, 2019.
- "Accretion Disks: From Black Holes to Planets", Iowa State University Physics & Astronomy Colloquium, March 4, 2019.
- "Accretion Disks: From Black Holes to Planets", University of Georgia Physics & Astronomy Colloquium, February 28, 2019.
- "Accretion Disks: From Black Holes to Planets", Michigan Tech University Physics Colloquium, February 7, 2019.
- "Accretion Disks: From Black Holes to Planets", Rochester Institute of Technology Astronomy Colloquium, January 28, 2019.

- "Accretion Disks: From Black Holes to Planets", University of Cincinnati Physics Colloquium, January 24, 2019.
- "What Drives Accretion in Protoplanetary Disks?", Waves, Turbulence, and Large-scale Structures in Rotating Magnetic Fluids, NCAR, Boulder, CO, September 14, 2018.
- "Unveiling the Physics of Planet Formation with Computational Astrophysics", Astronomy Seminar Series, Los Alamos National Laboratory, September 6, 2018.
- "The Nature of Planet Formation", TCU Physics & Astronomy Colloquium, April 17, 2018.
- "The Nature of Planet Formation", Missouri S&T Physics Colloquium, March 1, 2018.
- "The Nature of Planet Formation", American Museum of Natural History Astrophysics Seminar, February 27, 2018.
- "The Nature of Planet Formation", Rutgers University Astrophysics Seminar, February 22, 2018.
- "The Formation of Asteroids, Comets, and Kuiper Belt Objects", Rutgers University Student Seminar, February 21, 2018.
- "The Nature of Planet Formation", University of Memphis Physics Colloquium, February 16, 2018.
- "Accretion and Planet Formation in Protoplanetary Disks", University of Florida Astrophysics Colloquium, February 12, 2018.
- "What Drives Angular Momentum Transport in Protoplanetary Disks?", Ball Aerospace Seminar Series, August 4, 2017.
- "Planetesimal Formation", Atmospheres of Disks and Planets, Ringberg Castle, Germany, April 27, 2017.
- "Planetesimal Formation in Protoplanetary Disks: Implications for our Solar System and Beyond", University of Utah HEAP Seminar Series, April 7, 2017.
- "Turbulence vs. Wind, How is angular momentum transported in protoplanetary disks?", KITP Accretion Disks Program, February 23, 2017.
- "Planetesimal Formation in Protoplanetary Disks: Implications for our Solar System and Beyond", Ball Aerospace Seminar Series, January 13, 2017.
- "Planetesimal Formation in Protoplanetary Disks: Implications for our Solar System and Beyond", UC Santa Cruz Astrophysics FLASH Talk, December 9, 2016.
- "Unraveling the Mysteries of Star and Planet Formation", Clemson University Physics & Astronomy Colloquium, December 6, 2016.
- "Probing the Nature of Accretion and Planet Formation in Protoplanetary disks: Connecting Theory with Observations", Clemson University Astrophysics Research Seminar, December 5, 2016.
- "Probing the Nature of Accretion and Planet Formation in Protoplanetary Disks: Connecting Theory with ALMA Observations", Theory Lunch Seminar, Northwestern University, November 4, 2016.
- "Planetesimal Formation in Protoplanetary Disks: Implications for our Solar System and Beyond", Northern Arizona University Astronomy Colloquium, September 12, 2016.
- "The Role of Turbulence in Protoplanetary Disks", Turbulence and Waves in Flows Dominated by Rotation, NCAR, Boulder, CO, August 18, 2016.
- "Probing the Nature of Accretion and Planet Formation in Protoplanetary Disks: Connecting Theory with ALMA Observations", Sagan Fellows Symposium, Pasadena, CA, May 7, 2015.

- "Probing the Nature of Accretion and Planet Formation in Protoplanetary Disks: Connecting Theory with ALMA Observations", University of Washington, May 5, 2015.
- "Probing the Nature of Accretion and Planet Formation in Protoplanetary Disks: Connecting Theory with ALMA Observations", University of Nevada, Las Vegas Astronomy Colloquium, March 17, 2015.
- "Probing the Nature of Accretion and Planet Formation in Protoplanetary Disks: Connecting Theory with ALMA Observations", University of Texas Astronomy Colloquium, February 3, 2015.
- "Observational Signatures of MRI-driven Turbulence in Protoplanetary Disks: Connecting Numerical Simulations with ALMA", NOAO Flash Seminar Series, November 14, 2014.
- "Observational Signatures of MRI-driven Turbulence in Protoplanetary Disks: Connecting Numerical Simulations with ALMA", University of Colorado APS Colloquium, October 20, 2014.
- "Observational Signatures of MRI-driven Turbulence in Protoplanetary Disks: Connecting Numerical Simulations with ALMA", Non-ideal MHD, Stability, and Dissipation in Protoplanetary Disks, Niels Bohr Institute, Copenhagen, Denmark, August 7, 2014.
- "Observational Signatures of MRI-driven Turbulence in Protoplanetary Disks: Connecting Numerical Simulations with ALMA", From the MRI to the Sun, Chamonix, France, July 14, 2014.
- "Characterizing the Mesoscale Regime in Magnetized Accretion Disks", Stability, Energetics and Turbulent Transport in Astrophysical Fusion and Solar Plasmas, Princeton, April 10, 2013.
- "Turbulence in Protoplanetary Disks: Defining the Environment for Planet Formation", University of Wyoming Astronomy Colloquium, March 1, 2013.
- "Mesoscale Structures in Magnetized Accretion Disks", Astronomy Seminar Series, Los Alamos National Lab, January 23, 2013.
- "Turbulent Linewidths in Protoplanetary Disks: Predictions from Numerical Simulations", CITA Seminar, Canadian Institute for Theoretical Astrophysics, June 18, 2012.
- "Turbulent Linewidths in Protoplanetary Disks: Predictions from Numerical Simulations", Star and Planet Formation Seminar, Space Telescope Science Institute, May 22, 2012.
- "Mesoscale Structures in Magnetized Accretion Disks", Astrophysics Plasma Seminar Series, Princeton University, April 13, 2012.
- "Protoplanetary Disks from First Principles", TAC Seminar, University of California, Berkeley, February 6, 2012.
- "Turbulence in Protoplanetary Disks: Defining the Environment for Planet Formation", Southwest Research Institute (SwRI) Colloquium, Boulder, CO, October 25, 2011.
- "Turbulent Accretion in Magnetized Disks", CASA/JILA Seminar, University of Colorado, Boulder, November 13, 2009.
- "MRI Simulations with Athena", MRI Turbulence workshop, Grenoble, France, March 27, 2007.

Contributed/Other Talks

- "Planetesimal Formation in Dust Rings and Implications for Early Planet Formation", From Clouds to Planets II: The Astrochemical Link, October 5, 2022
- "Planetesimal Formation (or Lack Thereof) in Pressure Bumps", Europlanet Science Congress Meeting 16, September 20, 2022

- Led discussion on planetesimal formation in pressure bumps, MIAPP Meeting on Gaps, Rings, Spirals, and Vortices: Structure Formation In Planet Forming Disks, October 26, 2021
- "Protoplanetary Disk Rings as Sites for Planetesimal Formation", AAS (Virtual) Meeting #237, January 12, 2021
- "Planetesimal Formation in Turbulent Protostellar Disks", Five Years After HL Tau (Virtual Conference), December 7-11, 2020
- "Gas Dynamics in Protoplanetary Disks: Putting Accretion Theory to the Tes", Iowa State University Astronomy Seminar, October 23, 2020
- "Pebbles to Planetesimals: The Role of Pressure Bumps", AAS Meeting #235, January 6, 2020.
- "Testing the Streaming Instability as the Mechanism for Planetesimal Formation", Iowa State University Astronomy Seminar, November 8, 2019
- "Pebbles to Planetesimals: The Role of Pressure Bumps", Great Barriers in Planet Formation, Palm Cove, Australia, July 25, 2019.
- "What Drives Accretion in Protoplanetary Disks?", Take a Closer Look, Garching, Germany, October 17, 2018.
- "What Drives Accretion in Protoplanetary Disks?", Astrophysical Frontiers in the Next Decade and Beyond, Portland, Oregon, June 26, 2018.
- "What Drives Angular Momentum Transport in Protoplanetary Disks?", Planet Formation and Evolution, Jena, Germany, September 26, 2017.
- "Planetesimal Formation in Protoplanetary Disks", Accretion: Building New Worlds, Houston, TX, August 17, 2017.
- "The Formation of Close-in Exoplanets", AAS Meeting #229, January 6, 2017.
- "Planetesimal Formation in Protoplanetary Disks: Implications for our Solar System and Beyond", LASP Seminar, University of Colorado, September 22, 2016.
- "Probing the Nature of Turbulence in Protoplanetary Disks with ALMA", Resolving Planet Formation in the era of ALMA and Extreme AO, Santiago, Chile, May 16, 2016.
- "From Dust Grains to Planetesimals: The Role of the Streaming Instability in Protoplanetary Disks", Workshop on Young Solar Systems, Sant Cugat, Spain, April 20, 2016.
- "From Dust Grains to Planetesimals: The Importance of the Streaming Instability in Protoplanetary Disks", AAS Meeting #227, January 5, 2016.
- "New Simulations of Planetesimal Formation", Southwest Research Institute (SwRI) Lunch Talk, Boulder, CO, November 4, 2015.
- "Probing the Nature of Accretion in Protoplanetary Disks", CASA/JILA Seminar, Boulder, CO, October 30, 2015.
- "The Complex Dynamics of Protoplanetary Disks", Protoplanetary Disk Dynamics and Planet Formation, JAMSTEC, Japan, September 30, 2015.
- "MRI-Driven Turbulence in Protoplanetary Disks: Predictions for ALMA and Implications for Planet Formation", Star and Planet Formation in the Southwest, Oracle, AZ, March 24, 2015.
- "Observational Signatures of MRI-driven Turbulence in Protoplanetary Disks: Connecting Numerical Simulations with ALMA", AAS Meeting #225, January 7, 2015.

- "Observational Signatures of Turbulence in Protoplanetary Disks: Connecting Simulations and ALMA", Southwest Research Institute (SwRI) Lunch Talk, Boulder, CO, February 12, 2014.
- "Particle Trapping in the Outer Regions of Protoplanetary Disks", AAS Meeting #223, January 8, 2014.
- "The Importance of Vertical Magnetic Fields in Protoplanetary Disks", JSI Conference: "Putting Accretion Theory to the Test", Annapolis, MD, November 4, 2013.
- "Turbulent Linewidths in Protoplanetary Disks: Predictions from Numerical Simulations", University of Maryland, October 18, 2013.
- "Weak Accretion in the Outer Regions of Protoplanetary Disks", AAS Meeting #221, January 7, 2013.
- "Turbulent Linewidths in Protoplanetary Disks: Predictions from Numerical Simulations", Planet Formation and Evolution 2012, LMU, Munich, Germany, September 4, 2012.
- "Turbulence in Protoplanetary Disks: Defining the Environment for Planet Formation", The Origins of Stars and their Planetary Systems, McMaster University, June 12, 2012.
- "Turbulent Linewidths in Protoplanetary Disks: Predictions from Numerical Simulations", Astrophysics Theory Lunch, University of Virginia, May 24, 2012.
- "Simulations of Protoplanetary Disk Turbulence: Connecting Theory and Observations", JILA/CASA Postdoctoral Symposium, University of Colorado, Boulder, November 16, 2011.
- "Accretion Variability in Turbulent Disks", Max Planck Institute for Astrophysics (MPA), Garching, Germany, February 14, 2011.
- "Accretion Variability in Turbulent Disks", AAS Meeting #217, January 12, 2011.
- "Numerical Simulations of Accretion Flows", JILA/CASA Postdoctoral Symposium, University of Colorado, Boulder, October 28, 2010.
- "Accretion Variability in Turbulent Disks", CASA/JILA Seminar, University of Colorado, Boulder, October 8, 2010.
- "Local Simulations of Magnetized Accretion Disks", Dissertation Defense, University of Virginia, Charlottesville, VA, July 7, 2010.
- "Turbulent Accretion in Magnetized Disks", University of Virginia Astronomy Research Symposium, Charlottesville, VA, January 29, 2010.
- "Angular Momentum Transport in Magnetized Accretion Disks via the Magnetorotational Instability", Dissertation Talk, AAS Meeting #215, January 7, 2010.
- "Prandtl Numer Effects for MRI-driven Turbulence with Athena", MRI workshop, Ringberg Castle, Germany, April 17, 2009.
- "Locality of Turbulence in Magnetized Accretion Disks", University of Virginia Astronomy Research Symposium, Charlottesville, VA, January 23, 2009.
- "Turbulent Energy Flow and Dissipation in Magnetized Accretion Disks", University of Virginia Astronomy Research Symposium, Charlottesville, VA, January 25, 2008.
- "Accretion Physics with Athena", University of Virginia Astronomy Research Symposium, Charlottesville, VA, February 2, 2007.
- "Disks around Young, Low-Mass Stars: The Study of Accretion and Angular Momentum Transport", University of Illinois Undergraduate Physics Research Symposium, Urbana, IL, January 23, 2004.

Posters

- Simon, Jacob B., Flaherty Kevin M., Bai, Xue-Ning, Hughes, A. Meredith, "What Drives Accretion in Protoplanetary Disks?", Origins of Solar Systems, Gordon Conference, South Hadley, MA, June 18-23, 2017.
- Simon, Jacob B., Flaherty Kevin M., Bai, Xue-Ning, Hughes, A. Meredith, "What Drives Accretion in Protoplanetary Disks?", Disks, Dynamos, and Data: Confronting MHD Accretion Theory with Observations, KITP, Santa Barbara, CA, February 6-10, 2017.
- Simon, Jacob B. "Formation of Close-in Exoplanets", Exoplanets I, Davos, Switzerland, July 3-8, 2016.
- Simon, Jacob B., Armitage, Philip J., Youdin, Andrew N., Li, Rixin "The Physics of Planetesimal Formation", Extreme Solar Systems III, Waikoloa Beach, HI, November 29 - December 4, 2015.
- Simon, Jacob B., Hughes, A. Meredith., Flaherty, Kevin M., Bai, Xue-Ning, Armitage, Philip J., Gole, Daniel, Youdin, Andrew N., "Planetesimal Formation and Turbulence in Protoplanetary Disks", Origins of Solar Systems, Gordon Conference, South Hadley, MA, June 28 - July 3, 2015.
- Simon, Jacob B., Hughes, A. Meredith., Flaherty, Kevin M., Bai, Xue-Ning, Armitage, Philip J., "Observing Turbulence in Protoplanetary Disks", Circumstellar Disks and Planet Formation, Ann Arbor, MI, October 12-14, 2014.
- Simon, Jacob B., Bai, Xue-Ning, Armitage, Philip J., Stone, James M., Beckwith, Kris, "Turbulence in Protoplanetary Disks", Protostars and Planets VI, Heidelberg, Germany, July 15-20, 2013.
- Simon, Jacob B., Bai, Xue-Ning, Armitage, Philip J., Stone, James M., Beckwith, Kris, "Turbulence in Protoplanetary Disks", IAU Symposium #299, Victoria, B.C., Canada, June 2-7, 2013.
- Simon, Jacob B., Armitage, Philip J., Beckwith, Kris, "Simulations of Protoplanetary Disk Turbulence: Connecting Theory and Observations", AAS Meeting #219, January 11, 2012.
- Simon, Jacob B., Hawley, John F., Beckwith, Kris, "Accretion Variability Driven by Resistive MHD Turbulence", YSO Accretion Conference, Ringberg Castle, Germany, February 7-11, 2011.
- Simon, Jacob B., Hawley, John F., "Saturation of the MRI via Viscosity and Resistivity", Accretion Disks Conference, Cambridge, UK, September 6-8, 2009.
- Simon, Jacob B., Hawley, John F., Beckwith, Kris, "Energy Flow and Dissipation in MRI Turbulence", MRI workshop, Princeton, NJ, June 16-18, 2008.
- Simon, Jacob B., Hawley, John F., Beckwith, Kris, "Angular Momentum Transport in Protostellar Disks", ALMA Conference, Charlottesville, VA, June 22-24, 2007.
- Simon, Jacob B., Gammie, Charles F., "Disks around Young, Low-Mass Stars: The Study of Accretion and Angular Momentum Transport", University of Illinois Undergraduate Physics Poster Session, Urbana, IL, October, 2003.