

Sarah Ann Bird's CV

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Date of Birth

26th of June 1984

Language Skills

English (native), Spanish (excellent),
Finnish (intermediate),
Chinese (intermediate)

Nationality

United States of America

Research Expertise

Optical and spectroscopic observations
Galactic kinematic/simulations using potential theory
Galaxy halos
Galaxy formation and evolution

Refereed Publications

- **Bird, S. A.**, Xue, X.-X., Chao, L., Shen, J., Flynn, C., Yang, C., Constraints on the assembly history of the Milky Way's smooth, diffuse stellar halo from the metallicity-dependent, radially-dominated velocity anisotropy profiles probed with K giants and BHB stars using LAMOST, SDSS/SEGUE, and *Gaia*, 2020, *The Astrophysical Journal*, submitted.
- **Bird, S. A.**, Xue, X.-X., Chao, L., Shen, J., Flynn, C., Zhu, L., Wang, J., Velocity Dispersion and Mass Profiles of the Milky Way's Halo, 2020, in preparation.
- Ablimit, I., Zhao, G., Flynn, C., **Bird, S. A.**, The rotation curve, mass distribution and dark matter content of the Milky Way from Classical Cepheids, 2020, *The Astrophysical Journal Letters*, Vol. 895, Issue 1, L12.
- **Bird, S. A.**, Xue, X.-X., Chao, L., Shen, J., Flynn, C., Yang, C., Anisotropy of the Milky Way's stellar halo using K giants from LAMOST and *Gaia*, 2019, *The Astronomical Journal*, Vol. 157, Issue 3, p. 104.
- **Bird, S. A.** and Flynn, C., Fading Features Found in the Kinematics of the Far-Reaching Milky Way Stellar Halo, 2015, *Monthly Notices of the Royal Astronomical Society*, Vol. 452, p. 2675.
- **Bird, S. A.**, Flynn, C., Harris, W. E., and Valtonen, M., Red giants in the outer halo of the elliptical galaxy NGC 5128 / Centaurus A, 2015, *Astronomy and Astrophysics*, Vol. 575, id. A72, 10 pp.
- **Bird, S. A.**, Dynamical and Chemical Structure of Galactic Halos, 2014, *Annales Universitatis Turkuensis A I* 495, ISBN 978-951-29-5893-1.
- **Bird, S.**, Harris, W. E., Blakeslee, J. P., and Flynn, C., The Inner Halo of M 87: A First Direct View of the Red-Giant Population, 2010, *Astronomy and Astrophysics*, Vol. 524, p. A71.
- Kiminki, D. C., Kobulnicky, H. A., Gilbert, I., **Bird, S.**, and Chunev, G., Five More Massive Binaries in the Cygnus OB2 Association, 2009, *The Astronomical Journal*, Vol. 137, Issue 6, pp. 4608-4620.

Non-Refereed Publications

- **Bird, S. A.**, Xue, X.-X., Chao, L., Shen, J., Flynn, C., Yang, C., Galactic mass and anisotropy profile with halo K-giant and blue horizontal branch stars from LAMOST/SDSS and *Gaia*, 2020, *Galactic Dynamics in the Era of Large Surveys*, IAU Symposium, Vol. 353, pp. 91-95.
- **Bird, S. A.**, Galactic Mass and Anisotropy Profile with Halo K-Giant and Blue Horizontal Branch Stars from LAMOST/SDSS and *Gaia*, 2019, *Light in the Suburbs: Structure and Chemodynamics of Galaxy Halos*, p. 21.
- **Bird, S. A.**, Halo K-Giant Stars from LAMOST: Kinematics and Galactic Mass Estimate, 2017, *Formation and Evolution of Galaxy Outskirts*, IAU Symposium, Vol. 321, p. 48.
- **Bird, S. A.**, Resolved Stellar Halos of M87 and NGC 5128: Metallicities from the Red Giant Branch, 2016, *The General Assembly of Galaxy Halos: Structure, Origin and Evolution*, IAU Symposium, Vol. 317, pp. 276-277.
- **Bird, S. A.**, Flynn, C., Harris, W. E., Flynn, C., Blakeslee, J. P., and Valtonen, M., Resolved Stellar Halos of M87 and NGC 5128, 2015, *IAU General Assembly*, Vol. 22, p. 54524.

- **Bird, S.**, Flynn, C., Harris, W. E., and Valtonen, M., Centaurus A: Stellar Metallicity Transition in the Halo, 2013, American Astronomical Society, AAS Meeting 221, p. 303.01.
- Boles, T., Smartt, S. J., Valenti, S., Mattila, S., Kankare, E., Katajainen, S., **Bird, S. A.**, and Pursimo, T., Supernova 2010ik in UGC 112, 2010, Central Bureau Electronic Telegrams, 2479, 1. Edited by Green, D. W. E.
- Kiminki, D. C., Gilbert, I., **Bird, S.**, Chunev, G., Kobulnicky, H. A., Four More Massive Binaries in the Cygnus OB2 Association, 2009, Bulletin of the American Astronomical Society, Vol. 41, p. 300.
- **Bird, S.**, Chunev, G., Kobulnicky, H., Uzpen, B., Optical Spectroscopy of GLIMPSE Stars with 8 Micron Infrared Excesses, 2007, Bulletin of the American Astronomical Society, Vol. 39, p. 813.

Education

Ph.D. in Astronomy University of Turku, Department of Physics and Astronomy	August 2008 - November 2014
B.S. in Physics, minors in Mathematics and Spanish University of Missouri--Columbia, 3.643 cumulative Grade Point Average (out of 4)	August 2003 - December 2007

Honors and Awards

Dean's List , University of Missouri-Columbia.	All semesters 2003 - 2007
Valedictorian , Christian High School, O'Fallon, MO.	May 2003
"Lower Rower" Award , Christian High School, O'Fallon, MO, for service, helpfulness, and humility.	May 2003

Grants Received

Aliyun Fellowship , postdoctoral research	November 2018 - current
Chinese Academy of Sciences President's International Fellowship Initiative (PIFI) postdoctoral research, 400,000 RMB	January 2016 - October 2018
Postdoctoral Fellow of LAMOST , 300,000 RMB	Dec. 2014 - Dec. 2015
Turku University Foundation - Leena Tähtitisen Memorial Foundation , travel, 600€	October 2014
Finnish Graduate School Fund , conference, 173€	May 2014
Turku University Foundation - Leena Tähtitisen Memorial Foundation , travel, 700€	April 2014
Turku University Foundation - Leena Tähtitisen Memorial Foundation , travel, 800€	October 2013
Jenny and Antti Wihuri Foundation , postdoctoral research, 26000 €	October 2013
Emil Aaltonen Foundation , travel, 4100 €	April 2013
Turku University Foundation , doctoral studies, 9756 €	April 2013
Finnish Cultural Foundation , doctoral studies, 21000 €	2013
Finnish Graduate School Fund , conference, 150 €	June 2012
Magnus Ehrnrooth Foundation , travel, 3000 €	May 2012
Magnus Ehrnrooth Foundation , travel, 1500 €	April 2011
University of Turku , observations at the NOT, 1349 €	February 2011
Jenny and Antti Wihuri Foundation , doctoral studies, 21000 €	2010 - 2012
G.W. Wulff Astronomy Research Fund , travel, 1160 €	July 2010
Finnish Graduate School Fund , travel, 193 €	March 2010

Research and Work Experience

Postdoctoral Fellow , Beijing, China National Astronomical Observatories, Chinese Academy of Sciences	December 2018 - present
Postdoctoral Fellow , Shanghai Astronomical Observatory, Shanghai, China	December 2014 - 2018
Ph.D. Research with Chris Flynn in Australia	10 months
Research with Bill Harris McMaster University, Hamilton, Ontario, Canada Research conducted for the paper <i>The Inner Halo of M87: A First Direct View of the Red-Giant Population</i> in the Astronomy and Astrophysics Journal.	November - December 2010
Observation Run at the NOT 2.5 m Nordic Optical Telescope, La Palma, Spain	8 - 10 February 2011
Survey with Seppo Katajainen of a sample of variable stars for circular polarization and signs of magnetic fields.	3 - 6 October 2010

ESO Director General's Discretionary Fund Student

May - July 2008

European Southern Observatory in Santiago, Chile

Research conducted with Michael West and Roberto De Propis which included using SDSS to search for galaxy clusters around distant quasars and studying the globular cluster population around galaxy NGC 3370 using archival HST images.

Research Experience for Undergraduates

May - July 2007

University of Wyoming, Laramie

Research conducted with Dr. Chip Kobulnicky and Georgi Chunev which included reducing (using IRAF) and classifying the optical spectra [3910 - 6670 Å] for 20 previously unclassified stars having 8 micron excess in the Spitzer GLIMPSE Point Source Catalog. Spectra obtained with the Wyoming Infrared Observatory 2.3 m telescope and longslit spectrograph.

Comet Research

September 2006 - February 2008

University of Missouri-Columbia

Research conducted with Dr. Aigen Li involving comets, specifically Hale-Bopp, and using Fortran to model the dust production rates with particular attention paid to mm and cm-sized large grains.

Simulation Methods in Astrophysics, The Finnish Graduate School in Astronomy and

16 - 20 August 2010

Space Physics Summer School 2010, Mariehamn, Åland, Finland

Frontiers in High-Energy Astrophysics, The 27th School in Theoretical Physics, Hebrew

27 December - 5 January 2010

University of Jerusalem, Israel

Star Formation in the Milky Way and Nearby Galaxies, Nordic-Baltic Optical/NIR and

8 - 18 June 2009

Radio Astronomy Research Infrastructure Graduate Training Course, Tuorla Observatory,

University of Turku, Finland

Computer Experience and Skills**Linux (Suse, Fedora, Ubuntu),**

Research of galaxies.

Unix (Solaris), General use.**Windows,** General use.**Mac OS X,** General use.

Software: OpenOffice, StarOffice, Word, Excel, PowerPoint, HTML, Mathematica, FTP, SFTP, TELNET, SSH, Fortran, IRAF, Python, IDL, vi, Emacs, Mozilla, Firefox, Internet Explorer, gnuplot, Gnumeric, DS9, Source Extractor, SkyCat, SAS, SPSS, LaTeX, Beamer, Xournal, mongo, GIMP, TOPCAT, g3data.

Presentations**Sixth International Conference on Aerospace Science and Engineering, Invited Keynote**

12-14 November 2019

Speaker, Islamabad, Pakistan**2019 Meeting of the JSPS-CAS Collaboration Program: Origins of the Milky Way halo**

26-27 September 2019

substructure explored with LAMOST and Subaru, Oral, Hohhot, China

"Galactic Mass and Anisotropy Profile with Halo K-Giant and Blue Horizontal Branch Stars from LAMOST/SDSS and *Gaia*"

Light in the Suburbs: Structure and Chemodynamics of Galaxy Halos, Oral, Sexten, Italy

14 June 2019

"Galactic Mass and Anisotropy Profile with Halo K-Giant and Blue Horizontal Branch Stars from LAMOST/SDSS and *Gaia*"

Lunch talk, Peking University, Beijing, China

5 November 2018

"Milky Way's Mass and Anisotropy Profiles with LAMOST/SDSS and *Gaia*"

Postdoctoral Final Report, Oral, Shanghai Astronomical Observatory, Shanghai, China

26 October 2018

"Milky Way's Mass and Anisotropy Profiles with LAMOST/SDSS and *Gaia*"

Seminar, Yunnan University, Kunming, China

26 September 2018

"Milky Way's Mass and Anisotropy Profiles with LAMOST/SDSS and *Gaia*"

Stellar Halos Across the Cosmos, Oral, Heidelberg, Germany

2 July 2018

"Milky Way's Anisotropy Profile with LAMOST/SDSS and *Gaia*"

SDSS-IV Collaboration Meeting, Oral, Seoul, South Korea

18 June 2018

"Milky Way's Anisotropy Profile with LAMOST/SDSS and *Gaia*"

East Asian Young Astronomers Meeting, Oral, Ishigaki Island, Japan

14 November 2017

"Velocity Dispersion and Mass Profiles of the Milky Way's Halo"

Chinese Astronomical Society Meeting, Oral, Ürümqi, China

10 August 2017

"LAMOST Halo K Giants: Kinematic and Mass Profiles"

Asia-Pacific Regional IAU Meeting, Oral, Taipei, Taiwan

7 July 2017

"Halo K-Giant Stars from LAMOST: Kinematics and Galactic Mass Estimate"

Cross-Strait Symposium of Astrophysics, Oral, Taipei, Taiwan

2 July 2017

"Halo K-Giant Stars from LAMOST: Kinematics and Galactic Mass Estimate" Journal Club, Oral , Shanghai Astronomical Observatory, Shanghai, China	12 May 2017
"Review: Milky Way Stellar Halo as Seen by SDSS" 973 Project: LAMOST, Oral , Kunming, China	19 February 2017
"Halo K-Giant Stars from LAMOST: Kinematics and Galactic Mass Estimate" The Milky Way and its Environment, Poster , Paris, France	19-23 September 2016
"Halo K-Giant Stars from LAMOST: Kinematics and Galactic Mass Estimate" Chinese Astronomical Society Meeting, Oral , Wuhan, China	3 November 2016
"Halo K-Giant Stars from LAMOST: Kinematics and Galactic Mass Estimate" Colloquium, Oral , University of Science and Technology of China, Hefei, China	7 June 2016
"Halo K-Giant Stars from LAMOST: Kinematics and Galactic Mass Estimate" Tuorla Seminar, Oral , Kaarina, Finland	7 April 2016
"Halo K-Giant Stars from LAMOST: Kinematics and Galactic Mass Estimate" Formation and Evolution of Galaxy Outskirts: IAU Symposium No. 321, Poster Toledo, Spain, "Halo K-Giant Stars from LAMOST: Kinematics and Galactic Mass Estimate"	14 - 18 March 2016
Astrophysics Symposium, Oral , Suzhou, Jiangsu, China	4 - 6 December 2015
"The Resolved Stellar Halos of the Giant Elliptical Galaxies M87 and NGC 5128" KIAA/DoA 2015 Postdoc Science Day, Oral , Peking University, Beijing, China, "Kinematics of the Milky Way Stellar Halo: Fading Features and LAMOST"	11 November 2015
Graduate Student Dinner Talk, Oral , Peking University, Beijing, China, "Dynamical and Chemical Structure of Galactic Stellar Halos"	2 November 2015
Chinese Astronomical Society Meeting, Oral , Peking University, Beijing, China, "Dynamical and Chemical Structure of Galactic Stellar Halos"	19 - 21 October 2015
Journal Club, Oral , Shanghai Astronomical Observatory, Shanghai, China	11 September 2015
"Survival of Globular Clusters" IAU XXIX General Assembly, Poster	3 - 14 August 2015
Honolulu, Hawaii, USA, "Resolved Stellar Halos of M87 and NGC 5128" 2015 KIAA-SHAO Bilateral Workshop, Oral , Peking University Beijing, China, "Fading Features Found in the Milky Way Stellar Halo Kinematics"	18 - 19 May 2015
Xiamen University and SHAO Collaborative Meeting, Oral China, "Fading Features Found in the Milky Way Stellar Halo Kinematics"	24 - 29 March 2015
Baryons at Low Densities: the Stellar Halos Around Galaxies, Oral ESO Garching, Germany, "Resolved Stellar Halos of M87 and NGC 5128 (Cen A)"	23 - 27 February 2015
National Astronomical Observatories, Chinese Academy of Sciences, Oral Beijing, "Dynamical and Chemical Structure of Galaxy Halos"	6 February 2015
Tuorla-Tartu Annual Meeting 2014: Small and Large Scale Universe, Oral Turku, Finland, "Red-Giants in the Halos of M87 and NGC 5128"	1 - 3 October 2014
Alpine Cosmology Workshop 2014, Oral , Gschnitztal Valley, Tyrol, Austria "Red-Giants in the Halos of M87 and NGC 5128"	21 - 26 July 2014
European Week of Astronomy and Space Science (EWASS) 2014, Oral Geneva, Switzerland, "Fading Features Found in the Milky Way Stellar Halo Kinematics"	30 June - 4 July 2014
Astronomer's Days 2014, Oral , Savonlinna, Finland "Fading Features Found in the Milky Way Stellar Halo Kinematics"	26 - 28 May 2014
Tuorla Seminar, Oral , Piikkiö, Finland, "Testing a Velocity Dispersion Model of the Milky Way Stellar Halo"	29 November 2013
Galaxy Zoo -- Evolutionary Paths in Galaxy Morphology, Poster , Sydney, Australia "Testing a Velocity Dispersion Model of the Milky Way Stellar Halo"	23 - 26 September 2013
Astronomical Society of Australia, Poster , Melbourne, Australia, "Testing a Velocity Dispersion Model of the Milky Way Stellar Halo"	7 - 12 July 2013
American Astronomical Society 221st, Oral , Long Beach, California, "Centaurus A: Stellar Metallicity Transition in the Halo"	9 January 2013
Astronomer's Days 2012, Oral , Porvoo, Finland, "The Transition"	June 2012
GEMS, Oral , Swinburne University of Technology, Melbourne, Australia "The Transition"	2 May 2012
XIII meeting of Finnish National Committee on Space Research: FinCOSPAR 2011 Oral , Kemiö, Finland, "Distribution of Globular Clusters After a Late Merger"	31 August 2011

Guest Speaker, Pontificia Universidad Católica de Chile , Santiago, Chile "Distribution of Globular Clusters After a Merger"	12 April 2011
Dynamics of Low-Mass Stellar Systems: From Star Clusters to Dwarf Galaxies Workshop, Oral , Santiago, Chile, "Distribution of Globular Clusters After a Merger"	7 April 2011
Dark Matter Awareness Week, Oral , Tuorla Observatory, University of Turku, Finland, "Dark Matter in Galaxies"	3 December 2010
Tuorla-Tartu Annual Meeting 2010: Observational Cosmology, Oral Turku, Finland, "The Inner Halo of M87: A First Direct View of the Red-Giant Population"	3 September 2010
Astronomer's Days 2010, Oral , Kangasala, Finland "The Inner Halo of M87: A First Direct View of the Red-Giant Population"	6 June 2010
American Astronomical Society 211th Poster , Austin, Texas "Optical Spectroscopy of GLIMPSE Stars with 8 Micron Infrared Excesses"	9 January 2008

Outreach and Teaching Experience

#shutdownstem #strike4blacklives https://www.shutdownstem.com , https://www.particlesforjustice.org/ Take action to further the cause of ending global anti-blackness, beginning within academia.	10 June 2020
Committee On INclusiveness in the SDSS (COINS) Promotes opportunity and accessibility among the SDSS astronomy community	October 2018 - present
Radio interview , Science Cube on FM93.4, smgrad.io.cn, China Introduction to my astronomy career and my postdoc in China	26 November 2017
"Astronomy Meeting Public," Shanghai Natural History Museum, China Managing the table for introducing the public to the Shanghai Astronomical Observatory	26 November 2017
Xinhua High School , Shanxi, China Public astronomy lecture	August 2016
Aibeier English Kindergarten , Shanxi, China Special astronomy lecture welcoming the opening of the new school	August 2016
Time Trek Association , Finland Board member	September 2012 - December 2014
Public Talk for Paimio and Sauvo High Schools Paimio City Hall, Finland, "It's a Bird's Life"	7 March 2014
Finnish Astronomical Society Board member	June 2012 - June 2013
Job Shadowing Experience for a Turku High School Student Tuorla Observatory, University of Turku, Finland Host and organizer of a short research project for a female student from Turun Normaalkoulu IB-linja during her job following assignment for school.	November 29 - December 3 2010
Tuorla Open House Tuorla Observatory, University of Turku, Finland Tour guide for telescopes, optics lab, and general information about Tuorla during the days devoted to general public outreach.	March 2009, 2010
Assistant during Wyoming Astro Camp University of Wyoming, Laramie A week-long camp devoted to junior high school students for teaching them astrophysics in a fun and easy-to-understand way.	June 2007