

Xiaoting FU

University of Bologna & INAF-OAS

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Education

- Ph.D., Astrophysics Nov. 2012 - Oct. 2016
International School for Advanced Studies (SISSA), Trieste, Italy
Advisor: Alessandro Bressan, Paolo Molaro, Léo Girardi
Thesis: Evolution of low mass stars : lithium problem and α -enhanced tracks and isochrones
- M.Sc., Astrophysics Sep. 2009 - Jul. 2012
National Astronomical Observatories of China (NAOC), Chinese Academy of Sciences, Beijing, China
Advisor: Licai Deng, Evan Kirby, Puragra Guhathakurta
Thesis: Discovery of super-rich red giants in the dwarf satellite galaxies
- B.Sc., Optical Information Science and Technology Sep. 2004 - Jun. 2008
Beijing Jiaotong University (BJTU), Beijing, China

Work Experience

- PostDoc "Stellar clusters in the Gaia era" Feb.2017, will end in Jan.2019
University of Bologna & INAF-OAS(Osservatorio di Astrofisica e Scienza dello Spazio di Bologna)
Mentor: Angela Bragaglia, Alessio Mucciarelli

Honors and Awards

- Jan. 2016 "Top ten stories of 2015" *Astronomy Now* magazine
"Solving the lithium mystery"
- Oct. 2014 Bronze poster prize *ESO RASPUTIN* conference
"Li evolution in POP II pre-main sequence stars with overshoot and accretion"
- May. 2013 The best runner-up poster prize *IAUS 298*
"Discovery of super-Li rich red giants in dwarf spheroidal galaxies"
- July. 2012 Student merit award *Graduate University of Chinese Academy of Sciences*
- July. 2010 Student merit award *Graduate University of Chinese Academy of Sciences*

PI of Observations

- ALMA** *LiH - a probe of Galactic Li evolution and lithium problems* 2017.1.01499.S
2.1h, priority grade B
- Subaru/HDS** *Li-rich giant stars in the Galactic thin disk* S17B0177S
4h, rank A

NOT/FIES *Li-rich giant stars in the Galactic thin disk*

56-005

3 nights

Professional Activities

LAMOST-PLUS member	Sep.2009-Oct.2012
Gaia member	Jun.2013-Nov.2016
Gaia-ESO survey member	2017-present
ChETEC member	2017-present
ISSI international team core member	2018-2019
referee: A&A	2017-present

Seminars and conference talks (selected)

- *Lithium: insights(problems) in astrophysics and its Galactic evolution*
 - OATS-UNI/TS Seminar Trieste Italy • May. 2018
 - ESO informal discussion ESO Garching • Oct. 2017
 - NAOC seminar Beijing, China • Jan. 2018
- *The Gaia-ESO Survey: Lithium enrichment histories of the Galactic thick and thin disk*
 - Gaia-ESO Survey fourth science meeting Catania, Italy • Sep. 2017
- *The new PARSEC evolutionary tracks and isochrones with alpha enhancement*
 - ESO workshop: A revolution in stellar physics with Gaia and large surveys Warsaw, Poland • Sep. 2018
 - Gaia-ESO Survey fourth science meeting Catania, Italy • Sep. 2017
 - Galaxy seminar Shanghai Astronomical Observatory, China • Jan. 2017
 - SFB seminar ARI, Heidelberg University, Germany • Nov. 2016
- *Lithium evolution from Pre-Main Sequence to the Spite plateau: an environmental solution to the cosmological lithium problem*
 - Gaia-ESO Survey third science meeting Vilnius, Lithuania • Dec. 2015
 - Lunch talk Kavli Institute for Astronomy and Astrophysics, China • Dec. 2015
 - Lunch talk ESO Garching • Nov. 2015
- *Lithium problems: on the main sequence and the red giant branch*
 - Invited talk University of Science and Technology of China, China • Dec. 2015
 - Lunch talk National Astronomical Observatories of China • Dec. 2014
 - Invited talk Nanjing University, China • Dec. 2014
- *New PARSEC database of alpha enhanced stellar evolutionary tracks and isochrones for Gaia*
 - XXIX IAU General Assembly FM7 Hawaii, USA • Aug. 2015
- *The discovery of 14 lithium-rich red giants in Milky Way dwarf satellite galaxies*
 - Lithium in the Cosmos workshop Institut d'Astrophysique de Paris, France • Feb. 2012
 - LAMOST - PLUS workshop Rensselaer Polytechnic Institute, USA • Jun. 2011

Observation experience

Keck II - DEIMOS *Mauna Kea, USA • March 3-5, 2011*
 Hale telescope - DBSP *Palomar, USA • April 4-6, 2011*
 2.16m telescope - HRS *Xinglong, China • December 12-15, 2011*
 LAMOST *Xinglong, China • October 16-18, 2012; February 23-27, 2011*

Research experience

Observational:

Gaia-ESO survey *2017-present*

collaborators: Donatella Romano, Angela Bragaglia, Alessio Mucciarelli, & GES members.

- Low-alpha stars: exotic resident in our Galaxy?
- Hyper velocity stars: where are they from?
- Li enrichment histories in the Galactic thick and thin disc
- Newly discovered Li-rich giants in GES iDR5
- Evidence of atomic diffusion in M67

Open Clusters *2017-present*

collaborators: Angela Bragaglia, Alessio Mucciarelli

- The chemical composition of Ruprecht 147
- One Star to Tag Them All (OSSTA): post-Gaia DR2 clusters metallicity

Globular Clusters *2017-present*

collaborators: Alessio Mucciarelli

- Lithium abundance in lower red giant branch stars of Omega Centauri

Lithium-rich giant stars in Galactic thin disk *2016-present*

collaborators: Francesca Primas, Angela Bragaglia, Alessio Mucciarelli, Chao Liu

- High resolution spectroscopy follow up and demographics study for Li-rich giant stars newly-discovered in the Galactic thin disk

Lithium-rich giant stars in dSphs *2011-2013*

advisor: Evan Kirby, Puragra Guhathakurta, Licai Deng

- Super-Li Rich Red Giants in Dwarf Spheroidal Galaxies
- Demographics of lithium-rich, evolved red giants

Galactic Halo substructure *2009-2011*

advisor: Heidi Newberg, Carl Grillmair, Licai Deng

- Find new substructure and identify the known in the Galactic Halo via radial velocity base on the SDSS data and LAMOST pilot survey data

LAMOST pilot survey

2009-2012

advisor: Licai Deng

- Science tests for the LAMOST (Large Sky Area Multi-Objects Fiber Survey Telescope) fiber position and throughput
- LAMOST pilot survey target selection

Theoretical:

Cosmological lithium problem

2013-2015

advisor: Paolo Molaro, Alessandro Bressan

- Lithium evolution in metal-poor stars: An environmental solution to the cosmological lithium problem

PAESEC stellar tracks and isochrones

2013-present

advisor: Alessandro Bressan, Léo Girardi, Paola Marigo

- New database of stellar evolutionary tracks and isochrones with α -enhancement for Gaia
- Horizontal branch morphology of Globular Clusters
- RGB bump morphology of Globular Clusters

Scientific visits

- California Institute of Technology

Mar. 2011

contact person: Evan Kirby

- University of California, Santa Cruz

Apr. - May. 2011

contact person: Puragra Guhathakurta

- Rensselaer Polytechnic Institute

Jun. 2011

contact person: Heidi Newberg

- ESO

Nov. - Dec. 2016

contact person: Francesca Primas

Refereed papers

1st author

- Gaia-ESO survey: Li enrichment histories in the Galactic thick and thin disc

Xiaoting Fu, D. Romano, A. Bragaglia, A. Mucciarelli, K. Lind, E. Delgado Mena, S. G. Sousa, S. Randich, A. Bressan, L. Sbordone, S. Martell, A. J. Korn, C. Abia, R. Smiljani, P. Jofré, E. Pancino, G. Tautvaišienė, B. Tang, A. C. Lanzafame, G. Carraro, T. Bensby, F. Damiani, E. J. Alfaro, E. Flaccomio, L. Morbidelli, S. Zaggia, C. Lardo, L. Monaco, A. Frasca, P. Donati, A. Drazdaus, Y. Chorniy, A. Bayo, 2018, A&A, 610, A38

- New PARSEC database of α -enhanced stellar evolutionary tracks and isochrones, I. Calibration with 47Tuc (NGC104) and the improvement on RGB bump

Xiaoting Fu, Alessandro Bressan, Paola Marigo, Léo Girardi, Josefina Montalbán, Yang Chen, Ambra Nanni. 2018, MNRAS, 476, 496

- Lithium evolution in metal-poor stars: from Pre-Main Sequence to the Spite plateau

Xiaoting Fu, Alessandro Bressan, Paolo Molaro, Paola Marigo, 2015, MNRAS, 452, 3256F

2nd author

- The chemical composition of the oldest nearby open cluster Ruprecht 147

Angela Bragaglia, **Xiaoting Fu**, Alessio Mucciarelli, Gloria Andeuzzi, A&A, accepted

- Discovery of Super-Li Rich Red Giants in Dwarf Spheroidal Galaxies Evan Kirby, **Xiaoting Fu**, Puragra Guhathakurta & Licai Deng, 2012, ApJ, 752, L16

n^{th} author

- Lithium abundance in lower red giant branch stars of Omega Centauri

A. Mucciarelli, M. Salaris, L. Monaco, P. Bonifacio, **X. Fu**, S. Villanova, MNRAS, in press

- The Gaia-ESO Survey: properties of newly discovered Li-rich giants

R. Smiljanic, E. Franciosini, A. Bragaglia, G. Tautvaisiene, **X. Fu**, E. Pancino, V. Adibekyan, S. G. Sousa, S. Randich, J. Montalban, L. Pasquini, L. Magrini, A. Drazdauskas, R. A. Garcia, S. Mathur, B. Mosser, C. Regulo, R. de Assis Peralta, S. Hekker, D. Feuillet, M. Valentini, T. Morel, S. Martell, G. Gilmore, S. Feltzing, A. Vallenari, T. Bensby, A. J. Korn, A. C. Lanzafame, A. Recio-Blanco, A. Bayo, G. Carraro, M. T. Costado, A. Frasca, P. Jofre, C. Lardo, P. de Laverny, K. Lind, T. Masseron, L. Monaco, L. Morbidelli, L. Prisinzano, L. Sbordone, S. Zaggia, A&A, in press

○ The Gaia-ESO Survey: Evidence of atomic diffusion in M67?

C. Bertelli Motta, A. Pasquali, J. Richer, G. Michaud, M. Salaris, A. Bragaglia, L. Magrini, S. Randich, E. K. Grebel, V. Adibekyan, S. Blanco-Cuaresma, A. Drazdauskas, **X. Fu**, S. Martell, G. Tautvaisiene, G. Gilmore, E. J. Alfaro, T. Bensby, E. Flaccomio, A. J. Korn, A. C. Lanzafame, R. Smiljanic, A. Bayo, G. Carraro, M. T. Costado, F. Damiani, U. Heiter, A. Hourihane, P. Jofré, C. Lardo, L. Monaco, L. Morbidelli, S. G. Sousa, C. C. Worley, S. Zaggia, MNRAS, 478, 425B

○ An algorithm for preferential selection of spectroscopic targets in LEGUE

Jeffrey L. Carlin, Sebastien Lepine, Heidi Jo Newberg, Licai Deng, Timothy C. Beers, Yuqin Chen, Norbert Christlieb, **Xiaoting Fu**, Shuang Gao, Carl J. Grillmair, Puragra Guhathakurta, Zhanwen Han, Jinliang Hou, Hsu-Tai Lee, Jing Li, Chao Liu, Xiaowei Liu, Kaike Pan, J. A. Sellwood, Hongchi Wang, Fan Yang, Brian Yanny, Yueyang Zhang, Zheng Zheng, Zi Zhu, 2012, RAA, 12, 755

Conference proceedings

○ New PARSEC database of alpha enhanced stellar evolutionary tracks and isochrones for Gaia

Xiaoting Fu, Alessandro Bressan, Paola Marigo, Léo Girardi, Josefina Montalban, Yang Chen, Ambra Nanni, Antonio Lanza, 2016, IAUS, 317, 300F

○ Lithium evolution from Pre-Main Sequence to the Spite plateau: an environmental solution to the cosmological lithium problem

Xiaoting Fu, Alessandro Bressan, Paolo Molaro, Paola Marigo, 2015, IAUGA, 2254811F

- The discovery of 14 lithium-rich red giants in Milky Way dwarf satellite galaxies

Xiaoting Fu, Evan Kirby, Puragra Guhathakurta & Licai Deng, 2012, MSAIS, 22, 92F

Skills

- **Programming languages:** IDL, Python, Perl, Matlab
- **Astronomical software:** iSpec, MOOG, fv, ds9, GalPot, UniDAM
- **Virtual Observatory tools:** Topcat, Aladin, ESO data archive

Outreach

public talk Beijing planetarium, China, January, 2014

public talk No.1 railway High school, Huaihua, China, September, 2012

public talk Guokr.com, "The 8th day", Beijing, China, July, 2012

article *"About the book '100 Billion Suns'", Hunan Science & Technology Press, Sep, 2018*

article *"MilkyWay@home", Amateur astronomer (Chinese magazine), Dec, 2013*

article *"Observation in Palomar observatory", Amateur astronomer (Chinese magazine), Sep, 2013*