Sirio Belli

CONTACT INFORMATION

Alma Mater Studiorum - Università di Bologna
DIFA - Dipartimento di Fisica e Astronomia
via Piero Gobetti 93/2
40129, Bologna (Italy)
sirio.belli@unibo.it
https://siriobelli.github.io

APPOINTMENTS

Università di Bologna

Associate Professor — since 2023
Assistant Professor (*RTDb, Programma Rita Levi Montalcini*) — 2022 - 2023

Center for Astrophysics | Harvard & Smithsonian

Clay Fellow — 2019 - 2022

Max Planck Institute for Extraterrestrial Physics

Postdoctoral Researcher — 2015 - 2019

EDUCATION

California Institute of Technology

Ph.D. in Astronomy — 2015
M.S. in Astronomy — 2013

Università di Bologna

Laurea Magistrale in Astrophysics and Cosmology (cum laude) — 2010
Laurea Triennale in Physics (cum laude) — 2008

RESEARCH INTERESTS

- Formation and evolution of massive galaxies
- Stellar populations and kinematics
- Molecular and ionized gas in high-redshift galaxies
- Spectroscopic observations and data reduction

ACADEMIC SERVICE

Co-organizer of the Lorentz Center Workshop — 2017
The Physics of Quenching Massive Galaxies at High Redshift

Referee for more than 20 articles for *The Astrophysical Journal, The Monthly Notices of the Royal Astronomical Society, The Astrophysical Journal Letters, Astronomy & Astrophysics, Physical Review Letters*

Panel reviewer for the NSF Astronomy and Astrophysics Research Grants; External reviewer for the European Research Council, the French National Research Agency (ANR), and the Canadian Time Allocation Committee

Grants Awarded as PI

ERC Starting Grant 2022
"Red Cardinal": *Unveiling the Formation of Massive Galaxies with the James Webb Space Telescope* (EUR 1.3 million)

Space Telescope Science Institute 2021
JWST Cycle-1 GO 1810: *The Stellar and Gas Content of Galaxies at Cosmic Noon* (USD 0.5 million)

Invited Talks and Colloquia

- Several Invited Presentations at International Conferences, including *Subaru Telescope 20th Anniversary Symposium* (USA, 2019); *Birth, Life, and Fate of Massive Galaxies and Their Central Beating Heart* (Italy, 2018); *Advances in Galaxy Evolution* (Germany, 2017); *Deconstructing Galaxies at Cosmic Noon* (Netherlands, 2016), *Census, Evolution, Physics* (USA, 2015)
- Invited Seminars and Colloquia at several institutes including Center for Astrophysics, Tufts, Carnegie, UC Berkeley (USA); Royal Observatory Edinburgh (UK); University of Montreal (Canada), Bicocca University, Bologna University, INAF Padova, INAF Arcetri (Italy); ESO, LMU (Germany)

Observing Proposals and Experience

- I am the PI of successful observing proposals for JWST (46 hours), MMT (9 nights), Magellan (10 nights), and NOEMA (44 hours). I have also co-authored more than 40 successful observing proposals for a wide range of facilities, including JWST, Keck, VLT, Magellan, MMT, NOEMA, and ALMA.
- I have extensive experience using large ground-based optical and near-infrared telescopes, with a total of about 100 nights at the W. M. Keck Observatory, Very Large Telescope, Large Binocular Telescope, and Palomar Observatory.
- I have developed, documented, and publicly released `Flame`, a spectroscopic data reduction pipeline for optical and near-infrared observations, described in detail in a peer-reviewed article (Belli, Contursi & Davies, 2018, MNRAS, 478, 2097).

SUMMARY OF PUBLICATIONS

- I co-authored 47 peer-reviewed articles published on major scientific journals (ApJ, ApJL, MNRAS, A&A, Nature). The total number of citations is 2700; the median is 40 citations. My h index is 30.
- I am the first author of 9 peer-reviewed articles, totaling more than 600 citations. The median is 66 citations per article.

Here is a list of my first- and second-author publications:

18. Jee-Ho Kim, **Sirio Belli** & Rainer Weinberger 2022, submitted, arXiv:2210.14235
The Stellar Chemical Abundances of Simulated Massive Galaxies at $z = 2$

17. Minjung Park, **Sirio Belli**, Charlie Conroy, et al. 2022, submitted, arXiv:2210.03747
Rapid Quenching of Galaxies at Cosmic Noon

16. Shmuel Bialy, **Sirio Belli** & Marco Padovani 2022, A&A, 658, L13
Constraining the cosmic-ray ionization rate and spectrum with NIR spectroscopy of dense clouds. A testbed for JWST

15. Leah D. Zuckerman, **Sirio Belli**, Joel Leja & Sandro Tacchella 2021, ApJL, 922, L32
Reproducing the UVJ *Color Distribution of Star-forming Galaxies at* $0.5 < z < 2.5$ *with a Geometric Model of Dust Attenuation*

14. Debosmita Pathak, **Sirio Belli** & Rainer Weinberger 2021, ApJL, 916, L23
Quenching, Mergers, and Age Profiles for z = 2 Galaxies in IllustrisTNG

13. **Sirio Belli**, Alessandra Contursi, Reinhard Genzel, et al. 2021, ApJL, 909, L11
The Diverse Molecular Gas Content of Massive Galaxies Undergoing Quenching at $z \sim 1$

12. **Sirio Belli**, Andrew B. Newman & Richard S. Ellis 2019, ApJ, 874, 17
MOSFIRE Spectroscopy of Quiescent Galaxies at $1.5 < z < 2.5$*. II. Star Formation Histories and Galaxy Quenching*

11. **Sirio Belli**, Alessandra Contursi & Richard I. Davies 2018, MNRAS, 478, 2097
Flame: A Flexible Data Reduction Pipeline for Near-Infrared and Optical Spectroscopy

10. Andrew B. Newman, **Sirio Belli**, Richard S. Ellis & Shannon G. Patel 2018, ApJ, 862, 126
Resolving Quiescent Galaxies at $z \gtrsim 2$*. II. Direct Measures of Rotational Support*

9. Andrew B. Newman, **Sirio Belli**, Richard S. Ellis & Shannon G. Patel 2018, ApJ, 862, 125
Resolving Quiescent Galaxies at $z \gtrsim 2$*. I. Search for Gravitationally Lensed Sources and Characterization of Their Structure, Stellar Populations, and Line Emission*

8. Allison Man & **Sirio Belli** 2018, Nature Astronomy 2, 695
Star formation quenching in massive galaxies

7. **Sirio Belli**, Reinhard Genzel, Natascha M. Förster Schreiber, et al. 2017, ApJL, 841, 6
KMOS^{3D} *Reveals Low-level Star Formation Activity in Massive Quiescent Galaxies at* $0.7 < z < 2.7$

6. **Sirio Belli**, Andrew B. Newman & Richard S. Ellis 2017, ApJ, 834, 18
MOSFIRE Spectroscopy of Quiescent Galaxies at $1.5 < z < 2.5$*. I. Evolution of Structural and Dynamical Properties*

5. **Sirio Belli**, Andrew B. Newman & Richard S. Ellis 2015, ApJ, 799, 206
Stellar Populations from Spectroscopy of a Large Sample of Quiescent Galaxies at $z > 1$*: Measuring the Contribution of Progenitor Bias to Early Size Growth*

4. Andrew B. Newman, **Sirio Belli** & Richard S. Ellis, 2015, ApJ, 813, L7
Discovery of a Strongly Lensed Massive Quiescent Galaxy at $z = 2.636$*: Spatially Resolved Spectroscopy and Indications of Rotation*

3. **Sirio Belli**, Andrew B. Newman, Richard S. Ellis & Nick P. Konidaris 2014, ApJL, 788, 29
MOSFIRE Absorption Line Spectroscopy of $z > 2$ *Quiescent Galaxies: Probing a Period of Rapid Size Growth*

2. **Sirio Belli**, Andrew B. Newman & Richard S. Ellis 2014, ApJ, 783, 117
Velocity Dispersions and Dynamical Masses for a Large Sample of Quiescent Galaxies at $z > 1$*: Improved Measures of the Growth in Mass and Size*

1. **Sirio Belli**, Tucker Jones, Richard S. Ellis & Johan Richard 2013, ApJ, 772, 141
Testing the Universality of the Fundamental Metallicity Relation at High Redshift using Low-Mass Gravitationally Lensed Galaxies