

**CURRICULUM VITAE OF MARIANGELA BERNARDI  
(July 2023)**

Department of Physics and Astronomy

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Date/Place of birth: 24 August 1971, Sandrigo, Italy

**FACULTY APPOINTMENTS:**

July 2020 -	Professor	University of Pennsylvania
July 2010 - June 2020	Associate Professor	University of Pennsylvania
Jan 2005 - June 2010	Assistant Professor	University of Pennsylvania

**RESEARCH EXPERIENCE:**

Mar 2004 - Dec 2004	Research Associate	University of Pittsburgh
Mar 2002 - Feb 2004	Research Associate	Carnegie Mellon University
Jan 2000 - Feb 2002	Research Associate	University of Chicago

**HIGHER EDUCATION:**

Dec. 1999	Ph.D. in Astrophysics	( <i>Magna cum Laude</i> )	L.M.U. Munich
Dec. 1995	Laurea in Astronomy	( <i>Magna cum Laude</i> )	U. Padova

**RESEARCH ACCOMPLISHMENTS:**

- **149 published papers with a total of 34,000+ citations;**
- **31 first author papers with 3200+ citations of which 10 have more than 150 citations/paper;**
- **86 papers where I am one of the first three authors (6500+ citations);**
- **h-index of 69.**

## REFEREED PUBLICATIONS:

Publications are divided in two sets: *Major Role* and *Contributed*.

In the following, underlined names refer to students, postdocs and visitors while in my group.

## MAJOR ROLE:

1. Identification of tidal features in deep optical galaxy images with Convolutional Neural Networks  
Dominguez Sanchez, H., Martin, G., Damjanov, I., Buitrago, F., Huertas-Company, M., Bottrell, C., **Bernardi, M.**, Knapen, J. H., Vega-Ferrero, J., Hausen, R., Kado-Fong, E., Población-Criado, D., Souchereau, H., Leste, O. K., Robertson, B., Sahelices, B., & Johnston, K. V. 2023, MNRAS, 521, 3861 – 3872
2. Revisiting the SFR-Mass relation at  $z=0$  with detailed deep learning based morphologies  
Dominguez Sanchez, H., **Bernardi, M.**, & Huertas-Company, M. 2023, Memorie della SAI., EAS 2022 S11 (arXiv:2302.12265)
3. Stellar population analysis of MaNGA early-type galaxies: IMF dependence and systematic effects  
**Bernardi, M.**, Dominguez Sanchez, H., Sheth, R. K., Brownstein, J. R., & Lane, R. R. 2023, MNRAS, 518, 4713 – 4733
4. The half mass radius of MaNGA galaxies: effect of IMF gradients  
**Bernardi, M.**, Sheth, R. K., Dominguez Sanchez, H., Margalef-Bentabol, B., Bizyaev, D., & Lane, R. R. 2023, MNRAS, 518, 3494 – 3508
5. Lesson Learned from Two Largest Galaxy Morphological Classification Catalogues built by Convolutional Neural Networks  
Cheng, T.-Y., Dominguez Sanchez, H., Vega-Ferrero, J., Conselice, C. J., Siudek, M., Aragón-Salamanca, **Bernardi, M.**, Cooke, R., Ferreira, L., Huertas-Company, M., Krywult, J., Palmese, A., Pieres, A., Plazas Malagón, A. A. et al. (+ 40 co-authors) 2023, MNRAS, 2794 – 2809
6. Testing the key role of the stellar mass-halo mass relation in galaxy merger rates and morphologies via DECODE, a novel Discrete statistical sEmi-empiriCal mODEl  
Fu, H., Shankar, F., Ayromlou, M., Dickson, M., Koutsouridou, I., Rosas-Guevara, Y., Marsden C., **Bernardi, M.**, Shiamtanis, N. et al. (+12 co-authors) 2022, MNRAS, 516, 3206 – 3233
7. Coincidence between morphology and star-formation activity through cosmic time: the impact of the bulge growth  
Dimauro, P., Daddi, E., Shankar, F., Cattaneo, A., **Bernardi, M.**, Huertas-Company, M., (+ 7 co-authors) 2022, MNRAS, 513, 256 – 281
8. The weak dependence of velocity dispersion on disc fractions, mass-to-light ratio, and redshift: implications for galaxy and black hole evolution  
Marsden, C., Shankar, F., **Bernardi, M.**, Sheth, R. K., Fu, H., & Lapi, A. 2022, MNRAS, 510, 5639 – 5660

9. SDSS-IV DR17: final release of MaNGA PyMorph photometric and deep-learning morphological catalogues  
Dominguez Sanchez, H., Margalef-Bentabol, B., **Bernardi, M.**, & Huertas-Company, M. 2022, MNRAS, 509, 4024 – 4036
10. SDSS-IV MaNGA: drivers of stellar metallicity in nearby galaxies  
 Neumann, J., Thomas, D., Maraston, C., Goddard, D., Lian, J., Hill, L., Dominguez Sanchez, H., **Bernardi, M.**, Margalef-Bentabol, B., Barrera-Ballesteros, J. K., Bizyaev, D., Boardman, N. F., Drory, N., Fernández-Trincado, J. G., & Lane, R. 2021, MNRAS, 508, 4844 – 4857
11. Pushing automated morphological classifications to their limits with the Dark Energy Survey  
 Vega-Ferrero, J., Dominguez-Sanchez, H., **Bernardi, M.**, Huertas-Company, M., Morgan, R., Margalef-Bentabol, B. et al. (and 56 co-authors) 2021, MNRAS, 506, 1927 – 1943
12. The size function of massive satellites from the  $R_e - R_h$  and  $M_* - M_h$  relations: constraining the role of environment  
 Zanisi, L., Shankar, F., **Bernardi, M.**, Mei, S., & Huertas-Company, M. 2021, MNRAS, 505, L84-L89
13. On the Presence of a Universal Acceleration Scale in Elliptical Galaxies  
 Chae, K.-H., **Bernardi, M.**, Dominguez-Sanchez, H. & Sheth, R. K. 2020, ApJL, 903, 31 (6 pp)
14. The Stellar Mass Fundamental Plane: The virial relation and a very thin plane for slow-rotators  
**Bernardi, M.**, Dominguez-Sanchez, H., Margalef-Bentabol, B., Nikakhtar, F., & Sheth, R. K. 2020, MNRAS, 494, 5148 – 5160
15. Detecting outliers in astronomical images with deep generative networks. I. WGANs  
Margalef-Bentabol, B., Huertas-Company, M., Charnock, T., Margalef-Bentabol, C., **Bernardi, M.**, Dubois, Y., Lanusse, F., Leuthaud, A., Storey-Fisher, K. & Zanisi, L. 2020, MNRAS, 496, 2346 – 2361
16. Galaxy properties as revealed by MaNGA. III. Kinematic profiles and stellar population gradients in S0s  
 Dominguez-Sanchez, H., **Bernardi, M.**, Nikakhtar, F., Margalef-Bentabol, B. & Sheth, R. K. 2020, MNRAS, 495, 2894 – 2908
17. Constraining black hole-host galaxy scaling relations from the large-scale clustering of Active Galactic Nuclei: Implications for the mean radiative efficiency of supermassive black holes  
 Shankar, F., Alleinato, V., **Bernardi, M.**, Marsden, C., Lapi, A., Menci, N., Grylls, P. J., Zanisi, L., Moreno, J., Krumpel, M. & Sheth, R. K. 2020, Nature Astronomy, 4, 282 – 291
18. Probing black hole accretion tracks, scaling relations and radiative efficiencies from stacked X-ray active galactic nuclei  
 Shankar, F., Weinberg, D. H., Marsden, C., Grylls, P. J., **Bernardi, M.**, Yang, G.,

- Moster, B., Carraro, R., Alexander, D. M. et al. (and 19 co-authors) 2020, MNRAS, 493, 1500 – 1511
19. Galaxy sizes and the galaxy-halo connection - I. The remarkable tightness of the size distributions  
Zanisi, L., Shankar, F., Lapi, A., Menci, N., **Bernardi, M.**, Duckworth, C., Huertas-Company, M., Grylls, P. & Salucci, P. 2020, MNRAS, 492, 1671 – 1690
  20. Galaxy properties as revealed by MaNGA II. Differences in stellar populations of slow and fast rotator ellipticals and dependence on environment  
**Bernardi, M.**, Dominguez-Sanchez, H., Brownstein, J. R., Drory, N. & Sheth, R. K. 2019, MNRAS, 489, 5633 – 5652
  21. Galaxy properties as revealed by MaNGA. I. Constraints on IMF and  $M_*/L$  gradients in ellipticals  
Dominguez-Sanchez, H., **Bernardi, M.**, Brownstein, J. R., Drory, N. & Sheth, R. K. 2019, MNRAS, 489, 5612 – 5632
  22. Radial Acceleration Relation between Baryons and Dark or Phantom Matter in the Super-critical Acceleration Regime of Nearly Spherical Galaxies  
Chae, K.-H., **Bernardi, M.**, Sheth, R. K. & I. T. Gong 2019, ApJ, 877, 18 – 40
  23. Modeling Nearly Spherical Pure-Bulge Galaxies with a Stellar Mass-to-Light Ratio Gradient under the  $\Lambda$ CDM and MOND Paradigms: II. The Orbital Anisotropy of Slow Rotators within the Effective Radius  
Chae, K.-H., **Bernardi, M.**, Sheth, R. K. 2019, ApJ, 874, 41 – 60
  24. Black hole scaling relations of active and quiescent galaxies: Addressing selection effects and constraining virial factors  
Shankar, F., **Bernardi, M.**, Richardson, K., Marsden, C., Sheth, R. K., Allevato, V., Graziani, L., Mezcua, M., Ricci, F., Penny, S. J., La Franca, F. & Pacucci, F. 2019, MNRAS, 485, 1278 – 1292
  25. Transfer learning for galaxy morphology from one survey to another  
Dominguez-Sanchez, H., Huertas-Company, M., **Bernardi, M.**, Kaviraj, S., Fischer, J.-L. et al. (and 54 co-authors) 2019, MNRAS, 484, 93 – 100
  26. SDSS-IV MaNGA PyMorph Photometric and Deep Learning Morphological Catalogues and implications for bulge properties and stellar angular momentum  
Fischer, J.-L., Dominguez-Sanchez, H. & **Bernardi, M.** 2019, MNRAS, 483, 2057 – 2077
  27. A statistical semi-empirical model: satellite galaxies in groups and clusters  
Grylls, P. J., Shankar, F., Zanisi, L. & **Bernardi, M.** 2019, MNRAS, 483, 2506 – 2523
  28. Modeling Nearly Spherical Pure-Bulge Galaxies with Stellar Mass-to-Light Ratio Gradient under  $\Lambda$ CDM and MOND Paradigms: I. Methodology, Dynamical Stellar Mass and Fundamental Mass Plane  
Chae, K.-H., **Bernardi, M.** & Sheth, R. K. 2018, ApJ, 860, id. 81, 17

29. A catalog of polychromatic bulge-disk decompositions of  $\sim 17,600$  galaxies in CANDELS  
 Dimauro, P., Huertas-Company, M., Daddi, E., Perez-Gonzalez, P. G., **Bernardi, M.**, Barro, G. Buitrago, F., Caro, F., Cattaneo, A., Dominguez-Sánchez, H., Faber, S. M.; Häusler, B., Kocevski, D. D., Koekemoer, A. M., Koo, D. C., Lee, C. T., Mei, S., Margalef-Bentabol, B., Primack, J., Rodriguez-Puebla, A., Salvato, M., Shankar, F. & Tuccillo, D. 2018, MNRAS, 478, 5410 – 5426
30.  $M_*/L$  gradients driven by IMF variation: Large impact on dynamical stellar mass estimates  
**Bernardi, M.**, Sheth, R. K., Dominguez-Sanchez, H., Fischer, J.-L., Chae, K.-H., Huertas-Company, M. & Shankar, F. 2018, MNRAS, 477, 2560 – 2571
31. Improving galaxy morphologies for SDSS with Deep Learning: GZOO classification scheme and T-Type catalogues  
 Dominguez-Sanchez, H., Huertas-Company, M., **Bernardi, M.** & Fischer, J.-L. 2018, MNRAS, 476, 3661 – 3676
32. Stellar mass functions and implications for a variable IMF  
**Bernardi, M.**, Sheth, R. K., Fischer, J.-L., Meert, A., Chae, K.-H., Dominguez-Sanchez, H., Huertas-Company, M., Shankar, F. & Vikram, V. 2018, MNRAS, 475, 757 – 771
33. Comparing PyMorph and SDSS photometry. II. The differences are more than semantics and are not dominated by intracluster light  
**Bernardi, M.**, Fischer, J.-L., Sheth, R. K., Meert, A., Huertas-Company, M., Shankar, F. & Vikram, V. 2017, MNRAS, 468, 2569 – 2581
34. Comparing PyMorph and SDSS photometry. I. Background sky and model fitting effects  
 Fischer, J.-L., **Bernardi, M.** & Meert, A. 2017, MNRAS, 467, 490 – 500
35. Selection bias in dynamically-measured supermassive black hole samples: Scaling relations and correlations between residuals in semi-analytic galaxy formation models  
 Barausse, E., Shankar, F., **Bernardi, M.**, Dubois, Y. & Sheth, R. K. 2017, MNRAS, 468, 4782 – 4791
36. The high mass end of the stellar mass function: Dependence on stellar population models and recent agreement on fits to the light profile  
**Bernardi, M.**, Meert, A., Sheth, R. K., Fischer, J.-L., Huertas-Company, M., Maraston, C., Shankar, F. & Vikram, V. 2017, MNRAS, 467, 2217 – 2233
37. Selection bias in dynamically-measured super-massive black hole samples: dynamical masses and dependence on Sérsic index  
 Shankar, F., **Bernardi, M.** & Sheth, R. K., MNRAS, 2017, 466, 4029 – 4039
38. Mass assembly and morphological transformations since  $z \sim 3$  from CANDELS  
 Huertas-Company, M., **Bernardi, M.**, Perez-Gonzalez, P. G., Barro, G., Daddi, E., Dimauro, P., Faber, S., Koo, D., Mei, S. & Shankar, F. 2016, MNRAS, 462, 4495 – 4516

39. Selection bias in dynamically-measured super-massive black hole samples: consequences for pulsar timing arrays  
Sesana, A., Shankar, F., **Bernardi, M.** & Sheth, R. K. 2016, MNRAS, 463, L6 – L11
40. Selection bias in dynamically-measured super-massive black holes: its consequences and the quest for the most fundamental relation  
Shankar, F., **Bernardi, M.**, Sheth, R. K., Ferrarese, L., Graham, A. W., Savorgnan, G., Allevato, V., Marconi, A., Läsker, R. & Lapi, A. 2016, MNRAS, 460, 3119 – 3142
41. The massive end of the luminosity and stellar mass functions and clustering from CMASS to SDSS: Evidence for and against passive evolution  
**Bernardi, M.**, Meert, A., Sheth, R. K., Huertas-Company, M., Maraston, C., Shankar, F. & Vikram, V. 2016, MNRAS, 455, 4122 – 4135
42. A Catalogue of Two-Dimensional Photometric Decompositions in the SDSS-DR7 Spectroscopic Main Galaxy Sample: Extension to g- and i-Bands  
Meert, A., Vikram, V. & **Bernardi, M.** 2016, MNRAS, 455, 2440 – 2452
43. A Catalogue of Two-Dimensional Photometric Decompositions in the SDSS-DR7 Spectroscopic Main Galaxy Sample: Preferred Models and Systematics  
Meert, A., Vikram, V. & **Bernardi, M.** 2015, MNRAS, 446, 3943–3974
44. Systematic effects on the size-luminosity relation: dependence on model fitting and morphology  
**Bernardi, M.**, Meert, A., Vikram, V., Huertas-Company, M., Mei, S., Shankar, F. & Sheth, R.K. 2014, MNRAS, 443, 874–897
45. Modelling mass distribution in elliptical galaxies: mass profiles and their correlation with velocity dispersion profiles  
Chae, K., **Bernardi, M.** & Kravtsov, Andrey V. 2014, MNRAS, 437, 3670–3687
46. The massive end of the luminosity and stellar mass functions: Dependence on the fit to the light profile  
**Bernardi, M.**, Meert, A., Sheth, R.K., Vikram, V., Huertas-Company, M., Mei, S. & Shankar, F. 2013, MNRAS, 436, 697–704
47. Simulations of single and two-component galaxy decompositions for spectroscopically selected galaxies from the Sloan Digital Sky Survey  
Meert, A., Vikram, V. & **Bernardi, M.** 2013, MNRAS, 433, 1344–1361
48. No Evidence for a Dependence of the Mass-Size Relation of Early-type Galaxies on Environment in the Local Universe  
Huertas-Company, M., Shankar, F., Mei, S., **Bernardi, M.**, Aguerri, J.A.L., Meert, A. & Vikram, V. 2013, ApJ, 779, 29–38
49. Size Evolution of Spheroids in a Hierarchical Universe  
Shankar, F., Marulli, F., **Bernardi, M.**, Mei, S., Meert, A. & Vikram, V. 2013, MNRAS, 428, 109–128
50. Semi-empirical catalog of early-type galaxy-halo systems: dark matter density profiles, halo contraction and dark matter annihilation strength

- Chae, K., Kravtsov, A. V., Frieman, J. A. & **Bernardi, M.** 2012, JCAP, 11, article id. 004
51. Plane fundamentals of fundamental planes: Analytics and algorithms  
Sheth, R. K. & **Bernardi, M.** 2012, MNRAS, 422, 1825–1834
  52. Black Holes in Pseudobulges: demography and models  
Shankar, F., Marulli, F., **Bernardi, M.**, Mathur, F. & Bournaud, F. 2012, A&A, 540, 23–31
  53. Evidence of major dry mergers at  $M_* > 2 \times 10^{11} M_\odot$  from curvature in early-type galaxy scaling relations?  
**Bernardi, M.**, Roche, N., Shankar, F. & Sheth, R. K. 2011, MNRAS, 412, L6–L10
  54. Curvature in the color-magnitude relation but not in color- $\sigma$ : Major dry mergers at  $M_* > 2 \times 10^{11} M_\odot$ ?  
**Bernardi, M.**, Roche, N., Shankar, F. & Sheth, R. K. 2011, MNRAS, 412, 684–704
  55. Revisiting the Hubble sequence in the SDSS DR7 spectroscopic sample: a publicly available bayesian automated classification  
Huertas-Company, M., Aguerri, J. A. L, **Bernardi, M.**, Mei, S. & Sánchez Almeida, J. 2011, A&A, 525, A157 (1–13)
  56. The inner structure of very massive elliptical galaxies: implications for the inside-out formation mechanism of  $z \sim 2$  galaxies  
Tiret, O., Salucci, P., **Bernardi, M.**, Maraston, C. & Pforr, J. 2011, MNRAS, 411, 1435–1444
  57. Cosmic Evolution of Size and Velocity Dispersion for Early-type Galaxies  
Fan, L., Lapi, A., Bressan, A., **Bernardi, M.**, De Zotti, G. & Danese, L. 2010, ApJ, 718, 1460–1475
  58. Colour Gradients and Colour-Magnitude Relation of Brightest Cluster Galaxies compared to E/S0 Galaxies: Implications for their formation  
Roche, N., **Bernardi, M.** & Hyde, J. B. 2010, MNRAS, 407, 1231–1244
  59. Further constraining galaxy evolution models through the Size Function of SDSS Early-type galaxies  
Shankar, F., Marulli, F., **Bernardi, M.**, Boylan-Kolchin, M., Dai, X. & Khochfar, S., 2010, MNRAS, 405, 948–960
  60. The role of environment on the formation of early-type galaxies  
Rogers, B., Ferreras, I., Pasquali, A., **Bernardi, M.**, Lahav, O. & Kaviraj, S. 2010, MNRAS, 405, 329–339
  61. Galaxy luminosities, stellar masses, sizes, velocity dispersions as a function of morphological type  
**Bernardi, M.**, Shankar, F., Hyde, J. B., Mei, S., Marulli, F. & Sheth, R. K. 2010, MNRAS, 404, 2087–2122

62. Sizes and ages of SDSS ellipticals: Comparison with hierarchical galaxy formation models  
Shankar, F., Marulli, F., **Bernardi, M.**, Dai, X., Hyde, J. B. & Sheth, R. K. 2010, MNRAS, 403, 117–128
63. The age dependence of the size-stellar mass relation and some implications  
Shankar, F. & **Bernardi, M.**, 2009, MNRAS, 396, L76–L80
64. Spectral-based  $k$ -corrections and implications for the colour-magnitude relation of E/S0s and its evolution  
Roche, N., **Bernardi, M.** & Hyde, J. B. 2009, MNRAS, 398, 1549–1562
65. Evolution in the structural properties of early-type brightest cluster galaxies at small lookback time and dependence on the environment  
**Bernardi, M.** 2009, MNRAS, 395, 1491–1506
66. Curvature in the scaling relations of early-type galaxies  
Hyde, J. B. & **Bernardi, M.** 2009, MNRAS, 394, 1978–1990
67. The luminosity and stellar mass Fundamental Plane of early-type galaxies  
Hyde, J. B. & **Bernardi, M.** 2009, MNRAS, 396, 1171–1185
68. A search for the most massive galaxies. II. Structure, environment and formation  
**Bernardi, M.**, Hyde, J. B., Fritz, A., Sheth, R. K., Gebhardt, K. & Nichol, R. C. 2008, MNRAS, 391, 1191–1209
69. A search for the most massive galaxies. III. Surface brightness profiles and structural properties from HST images  
Hyde, J. B., **Bernardi, M.**, Fritz, A., Sheth, R. K. & Nichol 2008, MNRAS, 391, 1559–1576
70. The evolution of the  $M_{BH} - \sigma$  relation inferred from the age distribution of local early-type galaxies and AGN evolution  
Shankar, F., **Bernardi, M.** & Haiman, Z. 2008, ApJ, 694, 867–878
71. In search of the largest velocity dispersion galaxies using the Hobby-Eberly Telescope  
Salviander, S., Shields, G. A., Gebhardt K., **Bernardi, M.** & Hyde, J. B. 2008, ApJ, 687, 828–834
72. Decoding the spectra of SDSS early-type galaxies: new indicators of age and recent star formation  
Rogers, B., Ferreras, I., Lahav, O., **Bernardi, M.**, Sugata, K., & Suhyoung K. Y. 2007, MNRAS, 382, 750–760
73. The  $\sigma - L$  correlation in Nearby Early-Type Galaxies  
**Bernardi, M.** 2007, AJ, 133, 1954–1961
74. Selection bias in the  $M_{\bullet} - \sigma$  and  $M_{\bullet} - L$  correlations and its consequences  
**Bernardi, M.**, Sheth, R. K., Tundo, E., & Hyde, J. B. 2007, ApJ, 660, 267–275



75. On the inconsistency between the black hole mass function inferred from  $M_{\bullet} - \sigma$  and  $M_{\bullet} - L$  correlations  
Tundo, E., Bernardi, M., Hyde, J. B., Sheth, R. K., & Pizzella, A. 2007, ApJ, 663, 53–60
76. The ages, metallicities and star formation histories of SDSS early-type galaxies  
Jimenez, R., Bernardi, M., Haiman, Z., Panter, B., & Heavens, A. F. 2007, ApJ, 669, 947–951
77. Inferring the cosmic evolution of quasars from the age distribution of local early-type galaxies  
Haiman, Z., Jimenez, R., & Bernardi, M. 2007, ApJ, 658, 721–730
78. The luminosities, sizes and velocity dispersions of Brightest Cluster Galaxies: Implications for formation history  
Bernardi, M., Hyde, J. B., Sheth, R. K., Miller, C. J., & Nichol, R. C. 2007, AJ, 133, 1741–1755
79. A search for the most massive galaxies: Double Trouble?  
Bernardi, M., Sheth, R. K., Nichol, R. C. et al. 2006, AJ, 131, 2018–2034
80. Evolution and environment of early-type galaxies  
Bernardi, M., Nichol, R. C., Sheth, R. K., Miller, C. J. & Brinkmann, J. 2006, AJ, 131, 1288–1317
81. Colors, magnitudes and velocity dispersions in early-type galaxies: Implications for galaxy ages and metallicities  
Bernardi, M., Sheth, R. K., Nichol, R. C., Schneider, D. P. & Brinkmann, J. 2005, AJ, 129, 61–72
82. Redshift-Distance Survey of Early-Type Galaxies: Spectroscopic Data  
Wegner, G., Bernardi, M., Willmer, C. N. A., da Costa, L. N., Alonso, M. V., Pellegrini, P. S., & Maia, M. A. G. 2004, AJ, 126, 2268–2280
83. The quasar epoch and the stellar ages of early-type galaxies  
Cattaneo, A. & Bernardi, M. 2003, MNRAS, 344, 45–52
84. The velocity dispersion function of early-type galaxies  
Sheth, R. K., Bernardi, M., Schechter, P. et al. 2003, ApJ, 594, 225–231
85. Early-type galaxies in the SDSS. I. The sample  
Bernardi, M., Sheth, R. K., Annis J. et al. 2003, AJ, 125, 1817–1848
86. Early-type galaxies in the SDSS. II. Correlations between observables  
Bernardi, M., Sheth, R. K., Annis J. et al. 2003, AJ, 125, 1849–1865
87. Early-type galaxies in the SDSS. III. The Fundamental Plane  
Bernardi, M., Sheth, R. K., Annis J. et al. 2003, AJ, 125, 1866–1881
88. Early-type galaxies in the SDSS. IV. Colors and chemical evolution  
Bernardi, M., Sheth, R. K., Annis J. et al. 2003, AJ, 125, 1882–1896

89. Redshift-distance Survey of Early-type Galaxies: Circular Aperture Photometry  
Alonso, M. V., **Bernardi, M.**, da Costa, L. N., Wegner, G., Willmer, C. N. A., Pellegrini, P. S., & Maia, M. A. G. 2003, AJ, 125, 2307–2324
90. A feature at  $z \sim 3.2$  in the evolution of the Ly $\alpha$  forest optical depth  
**Bernardi, M.**, Sheth, R. K., Subbarao M. et al. 2003, AJ, 125, 32–52
91. Detection of He II reionization in the SDSS quasar sample  
Theuns, T., **Bernardi, M.**, Frieman, J., Hewett, P., Schaye, J., Sheth, R. K., & Subbarao M. 2002, ApJ Letters, 574, 111–114
92. Redshift-distance Survey of Early-type Galaxies. I. The ENEARc Cluster Sample  
**Bernardi, M.**, Alonso, M. V., da Costa, L. N., Willmer, C. N. A., Wegner, G., Pellegrini, P. S., Rit e, C., & Maia, M. A. G. 2002, AJ, 123, 2990–3017
93. Redshift-distance Survey of Early-type Galaxies. II. The Dn- $\sigma$  Relation  
**Bernardi, M.**, Alonso, M. V., da Costa, L. N., Willmer, C. N. A., Wegner, G., Pellegrini, P. S., Rit e, C., & Maia, M. A. G. 2002, AJ, 123, 2159–2182
94. Sloan Digital Sky Survey: Early Data Release  
Stoughton, C., Lupton, R. H., **Bernardi, M.** et al. 2002, AJ, 123, 485–548
95. Large-scale power spectrum and structures from the ENEAR galaxy peculiar velocity catalogue  
Zaroubi, S., **Bernardi, M.**, da Costa, L. N., Hoffman, Y., Alonso, M. V., Wegner, G., Willmer, C. N. A., & Pellegrini, P. S. 2001, MNRAS, 326, 375–386
96. Toward an Alternative Way of Looking at Elliptical Galaxies: Case Studies for NGC 4649 and NGC 7097  
De Bruyne, V., Dejonghe, H., Pizzella, A., **Bernardi, M.**, and Zeilinger, W. W. 2001, ApJ, 546, 903–915
97. Comparison of the ENEAR peculiar velocities with the PSCz gravity field  
Nusser, A., da Costa, L. N., Branchini, E., **Bernardi, M.**, Alonso, M. V., Wegner, G., Willmer, C. N. A., & Pellegrini, P. S. 2001, MNRAS, 320, 21–24
98. Redshift-Distance Survey of Early-Type Galaxies. I. Sample Selection, Properties, and Completeness  
da Costa, L. N., **Bernardi, M.**, Alonso, M. V., Wegner, G., Willmer, C. N. A., Pellegrini, P. S., Rit e, C., & Maia, M. A. G. 2000, AJ, 120, 95–109
99. ENEAR Redshift-Distance Survey: Cosmological Constraints  
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100. Redshift-Distance Survey of Early-Type Galaxies: Dipole of the Velocity Field  
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101. Cluster versus Field Elliptical Galaxies and Clues on Their Formation  
**Bernardi, M.**, Renzini, A., da Costa, L. N., Wegner, G., Alonso, M. V., Pellegrini, P. S., Rit e, C., & Willmer, C. N. A. 1998, ApJ Letters, 508, 143–146

**CONTRIBUTED:**

102. The Seventeenth Data Release of the Sloan Digital Sky Surveys: Complete Release of MaNGA, MaStar, and APOGEE-2 Data  
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103. The Sixteenth Data Release of the Sloan Digital Sky Surveys: First Release from the APOGEE-2 Southern Survey and Full Release of eBOSS Spectra  
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104. The Hubble Sequence at  $z_{sim0}$  in the IllustrisTNG simulation with deep learning  
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105. The structural properties of classical bulges and discs from  $z \sim 2$   
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106. The Fifteenth Data Release of the Sloan Digital Sky Surveys: First Release of MaNGA-derived Quantities, Data Visualization Tools, and Stellar Library  
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107. SDSS-IV MaNGA: The Formation Sequence of S0 Galaxies  
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108. Deep Learning Identifies High- $z$  Galaxies in a Central Blue Nugget Phase in a Characteristic Mass Range  
Huertas-Company, M., Primack, J. R., Dekel, A., Koo, D. C., Lapiner, S., Ceverino, D., Simons, R. C., Snyder, G. F., **Bernardi, M.**, Chen, Z., Dominguez-Sanchez, H., Lee, C. T., Margalef-Bentabol, B. & Tuccillo, D. 2018, *ApJ*, 858, id. 114, 17
109. The Fourteenth Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the extended Baryon Oscillation Sky Survey and from the second phase of the Apache Point Observatory Galactic Evolution Experiment  
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110. Revisiting the bulge-halo conspiracy II: Towards explaining its puzzling dependence on redshift  
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111. Revisiting the bulge-halo conspiracy I: Dependence on galaxy properties and environment  
Shankar, F., Sonnenfeld, A., Mamon, G. A., Chae, K., Gavazzi, R., Treu, T. Diemer, B., Nipoti, C., Buchan, S., **Bernardi, M.**, Sheth, R. K. & Huertas-Company, M. 2017, *ApJ*, 840, 34 – 56

112. Sloan Digital Sky Survey IV: Mapping the Milky Way, Nearby Galaxies and the Distant Universe  
Blanton, M. R. et al. 2017, *AJ*, 154, 28 – 63
113. A catalog of visual-like morphologies in the 5 CANDELS fields using deep-learning  
Huertas-Company, M., Gravet, R., Cabrera-Vives, G., Perez-Gonzalez, P. G., Kartaltepe, J., Barro, G., **Bernardi, M.**, Mei, S., Shankar, F., Dimauro, P., Bell, E. F., Kocevski, Koo, D., Lotz, J., Faber, S. & McIntosh, D. 2015, *ApJS*, 221, 23 – 49
114. The morphologies of massive galaxies from  $z \sim 3$  - witnessing the 2 channels of bulge growth  
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Shankar, F., Guo, H., Bouillot, V., Rettura, A., Meert, A., Buchan, S., Kravtsov, A., **Bernardi, M.**, Sheth, R.; Vikram, V., Marchesini, D., Behroozi, P., Zheng, Z., Maraston, C., Ascaso, B., Lemaux, B. C., Capozzi, D., Huertas-Company, M., Gal, R. R., Lubin, L. M., Conselice, C. J., Carollo, M., Cattaneo, A. 2014, *ApJL*, 797, 27–33
117. Larger sizes of massive quiescent early-type galaxies in clusters than in the field at  $0.8 < z < 1.5$   
Delaye, L., Huertas-Company, M., Mei, S., Lidman, C., Licitra, R., Newman, A., Raichoor, A., Shankar, F., Barrientos, F., **Bernardi, M.**, Cerulo, P., Couch, W., Demarco, R., Muñoz, R., Sánchez-Janssen, R. & Tanaka, M. 2014, *MNRAS*, 441, 203–223
118. Environmental dependence of bulge-dominated galaxy sizes in hierarchical models of galaxy formation. Comparison with the local Universe  
Shankar, F., Mei, S., Huertas-Company, M., Moreno, J., Fontanot, F., Monaco, P., **Bernardi, M.**, Cattaneo, A., Sheth, R. K., Licitra, R., Delaye, L. & Raichoor, A. 2014, *MNRAS*, 439, 3189–3212
119. The Multi-Object, Fiber-Fed Spectrographs for SDSS and the Baryon Oscillation Spectroscopic Survey  
Smee, S. et al. 2013, *AJ*, 146, 32 – 72
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121. The Sixth Data Release of the Sloan Digital Sky Survey, The SDSS collaboration (Adelman-McCarthy, J. K. et al.) 2008, *ApJS*, 175, 297–313

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124. The C4 Clustering Algorithm: Clusters of Galaxies in the Sloan Digital Sky Survey, Miller, C. J., Nichol, R. C., Reichart, D. et al. 2005, AJ, 130, 968–1001
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126. Sloan Digital Sky Survey Imaging of Low Galactic Latitude Fields: Technical Summary and Data Release, Finkbeiner, D. P., Padmanabhan N., Schlegel D. J., et al. 2004, AJ, 128, 2577–2592
127. The Second Data Release of the Sloan Digital Sky Survey, The SDSS collaboration (Abazajian, J. K. et al.) 2004, AJ, 128, 502–512
128. Stellar and Dynamical Masses of Ellipticals in the Sloan Digital Sky Survey, Padmanabhan, N., Seljak, U., Strauss, M. A. et al. 2004, New Astronomy, 9, 329–342
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137. The Morphological Butcher-Oemler effect in the SDSS: Cut & Enhance Galaxy Cluster Catalog, Goto, T., Okamura, S., Yagi, M. et al. 2003, PASJ, 55, 739–755
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146. Spectroscopic Target Selection for the Sloan Digital Sky Survey: The Luminous Red Galaxy Sample, Eisenstein, D. J., Annis, J., Gunn, J. E. et al. 2001, *AJ*, 122, 2267–2280
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150. The Luminosity Function of Galaxies in SDSS Commissioning Data, Blanton, M. R., Dalcanton, J., Eisenstein, D. et al. 2001, *AJ*, 121, 2358–2380

## **RESOURCES: GRANTS & AWARDS**

NSF AST/1816330 – US\$ 418,218 (2018 – 2022)

“Deep-Learning for Galaxy Morphology in the Big Data Era ”

**PI: M. Bernardi**

NASA ADP/NNX09AD02G – US\$ 421,258 (2009 – 2014)

“2MASSDSX: A homogeneous catalog of galaxies from the NIR to the NUV”

**PI: M. Bernardi**

NSF AST/0908242 – US\$ 210,856 (2009 – 2012)

“Evidence for the re-ionization of He II from the evolution of the Ly- $\alpha$  forest optical depth in the SDSS?”

**PI: M. Bernardi**

HST-GO-10488.01-A – US\$ 92,317 (2005 – 2008)

“The Most Massive Galaxies in the Universe: Color-Gradients and Texture”

**PI: M. Bernardi**

NASA ADP/LTSA/NNG06GC19G – US\$ 369,212 (2005–2009)

“A Search for and Analysis of the Most Massive Galaxies”

**PI: M. Bernardi**

HST-GO-10199.06-A – US\$ 113,148 / US\$ 100,148 to P.I. (2005 – 2007)

“The Most Massive Galaxies in the Universe: Double Trouble?”

**PI: M. Bernardi**, CoI: R. K. Sheth, K. Gebhardt, R. C. Nichol

SDSS: Spectroscopic pipeline Builder

European Southern Observatory: Studentship (Oct 1996 - Apr 1999)

## **THESIS ADVISOR & POST-GRADUATE SCHOLAR SPONSOR:**

### **Graduate Students:**

J. Robe (UPenn), June 2023 – present

Funding source: NSF Graduate Research Fellowship

J.-L. Fischer (UPenn), September 2014 – December 2018

Funding source: NASA ADP/NNX09AD02G + UPenn funds

Thesis title: Measuring Photometric Properties of SDSS and MaNGA galaxies

Present position: Data Analyst, Comcast

A. Meert (UPenn), January 2010 – May 2015

Funding source: NSF AST/0908242 + NASA ADP/NNX09AD02G

Thesis title: Bulges and Disks in the Nearby Universe: Applications to Evolution and Formation of Galaxies

Present position: Data Engineer, Swift Capital

E. Tundo (U. Padova / UPenn), May 2006 – March 2010

Funding source: INAF funds

Thesis title: Supermassive Black Holes: a spectroscopic and photometric study on the connection with their host galaxies

Present position: Staff, INAF Florence

J. Hyde (UPenn), September 2005 – May 2009

Funding source: HST-GO-10199.06-A + HST-GO-10488.01-A + NASA ADP/LTSA/NNG06GC19G

Thesis title: Galaxy Image Processing and Morphological Modeling: Applications to Understanding Galaxy Formation and Evolution

Present position: Quantitative Researcher - Global Quantitative Strategies, Citadel LLC

H. Kang (Dartmouth College / Upenn), June 2005 – October 2010

Funding source: Prof. G. Wegner funds

Thesis title: Cosmic Velocity Flows in the Large Scale with SDSS DR7 Early Type Galaxies

Present position: Data Scientist, KAIST Korea

### **Postdoctoral Scholars:**

B. Margalef-Bentabol, October 2019 – September 2021

Funding source: NSF AST/1816330

J. Ferrero, January 2019 – December 2020

Funding source: UPenn funds

H. Dominguez-Sanchez, September 2016 – August 2019

Funding source: UPenn funds + NSF AST/1816330

V. Vikram (in collaboration with Prof. Jain), September 2010 – August 2014

Funding source: DES-UPenn funds

Present position: KICP Associate fellow, Argonne National Laboratory

N. Roche, September 2007 – June 2009

Funding source: NASA ADP/LTSA/NNG06GC19G

Present position: Staff, CAUP Portugal

A. Fritz, September 2006 – August 2007

Funding source: NASA ADP/LTSA/NNG06GC19G

Present position: Data Scientist, OmegaLambdaTec GmbH Germany

### **LONG TERM VISITORS:**

M. Huertas-Company, September 2016 – August 2017

Assistant Professor, Paris Observatory/University Paris Diderot

K.-H. Chae, January 2017 – December 2017

Professor, Sejong University Korea



## COURSES DEVELOPED AND TAUGHT:

2023A	ASTR001001	Survey of the Universe	60 students
2022C	ASTR211001	Intro Astrophysics I	34 students
2022A	ASTR001001	Survey of the Universe	50 students
2021C	ASTR533001	Galaxies: Structure, Dynamics and Formation	8 students
2021A	ASTR001001	Survey of the Universe	77 students
2020C	ASTR001001	Survey of the Universe	57 students
2020A	ASTR001001	Survey of the Universe	77 students
2019C	ASTR533001	Galaxies: Structure, Dynamics and Formation	4 students
2019A	ASTR001002	Survey of the Universe	52 students
2018C	ASTR211001	Intro Astrophysics I	33 students
2018A	ASTR001001	Survey of the Universe	68 students
2017C	ASTR533001	Galaxies: Structure, Dynamics and Formation	10 students
2017A	ASTR001001	Survey of the Universe	81 students
2016C	ASTR211001	Intro Astrophysics I	31 students
2016A	ASTR001001	Survey of the Universe	83 students
2015C	ASTR533001	Galaxies: Structure, Dynamics and Formation	4 students
2015A	ASTR001001	Survey of the Universe	79 students
2014C	ASTR211001	Intro Astrophysics I	12 students
2014A	ASTR001001	Survey of the Universe	77 students
2013C	ASTR533001	Galaxies: Structure, Dynamics and Formation	5 students
2013A	ASTR001001	Survey of the Universe	78 students
2012C	ASTR001001	Survey of the Universe	63 students
2011C	ASTR001001	Survey of the Universe	26 students
2010C	ASTR001001	Survey of the Universe	88 students
2010C	ASTR001002	Survey of the Universe	69 students
2010A	ASTR533001	Galaxies: Structure, Dynamics and Formation	5 students
2009		Galaxies and Stellar Populations, Padova (10 hrs)	
2009C	ASTR001002	Survey of the Universe	82 students
2008C	ASTR533001	Galaxies: Structure, Dynamics and Formation	6 students
2008A	ASTR001002	Survey of the Universe	72 students
2007A	ASTR001003	Survey of the Universe	21 students
2006C	ASTR001002	Survey of the Universe	63 students
2006C	PREC130001	Exploring the Stars	71 students
2006		Galaxy formation and evolution, Padova (15 hrs)	
2006A	PHYS295-301	3 × 1.5 hrs lecture	8 students
2006A	ASTR001001	Survey of the Universe	54 students
2005		Galaxies and Stellar Populations, Naples (8 hrs)	
2005C	ASTR001002	Survey of the Universe	69 students

## COMMITTEES & ADMINISTRATIVE ASSIGNMENTS:

2023 Member of PhD Thesis committee for R. Sarmiento (IA Canarias)  
 2023 Member of PhD Thesis committee for B. Dogruel (U. Swinburne)  
 2023 – 2024 Mentor of A. Germer  
 2022 – 2023 Mentor of A. Kundu  
 2022 – 2023 Mentor of M. Young  
 2022 – present Mentoring committee of M. Madhavacheril  
 2017 – present Mentoring committee of B. Zhen  
 2021 – present Member of PhD Thesis committee for H. Qu (UPenn)  
 2020 – 2022 Member of PhD Thesis committee for F. Nikakhtar (UPenn)  
 2021 Referee of PhD Thesis of C. Cannarozzo (U. Bologna)  
 2020 – 2021 Member of PhD Thesis committee for C. Cannarozzo (U. Bologna)  
 2019 – 2020 Member of PhD Thesis committee for D. Varghese (UPenn)  
 2019 – 2020 Undergrad Students Committee  
 2019 – 2020 Member of Committee for Promotion of C. Blake  
 2019 Physics 501 lecture  
 2018 Physics 501 lecture  
 2018 – 2019 Colloquium Committee  
 2018 Teaching mentor of postdoc K. Eckert  
 2017 – 2018 Astro Faculty Search Committee  
 2017 – 2018 Chair Rittenhouse Lecture Committee  
 2017 – 2018 Member of PhD Thesis committee for D. Brout (UPenn)  
 2016 – 2017 Colloquium Committee  
 2015 – 2016 Chair Colloquium Committee  
 2015 Member of PhD Thesis committee for J. Fischer (UPenn)  
 2015 Supervisor of PhD Thesis of A. Meert (UPenn)  
 2014 – 2015 Chair Colloquium Committee  
 2014 – 2015 Member of Committee for Promotion of A. Lidz  
 2014 – 2015 Member of Graduate Admissions Committee  
 2014 – 2015 Member of PhD Thesis committee for Z. J. Qi (UPenn)  
 2013 – 2014 Member of PhD Thesis committee for K. Douglass (Drexel)  
 2013 Colloquium Committee  
 2012 Examination of PhD thesis of C. Margoulas (University of Melbourne)  
 2011 Member of PhD Thesis committee for A. Cardullo (Padova University)  
 2011 Member of PhD Thesis committee for C. Grava (Padova University)  
 2011 Member of the oral presentation committee for Z. J. Qi (UPenn)  
 2011 Member of PhD Thesis committee for C. Moorman (Drexel)  
 2010 – 2011 Astro Faculty Search Committee  
 2010 Supervisor of PhD Thesis of E. Tundo (Padova/UPenn)  
 2009 – 2010 Astro Faculty Search Committee  
 2009 Chair of PhD Thesis committee for M. Caler (UPenn)  
 2009 Supervisor of PhD Thesis of J. Hyde (UPenn)  
 2008 – 2009 Astro Faculty Search Committee  
 2008 Colloquium Committee  
 2007 Undergrad Students Committee  
 2007 Liaison with SAS computing about sys admin needs  
 2006 – 2010 Member of PhD Thesis committee for J. Parejko (Drexel)  
 2006 Graduate Students Committee  
 2006 – 2007 Astro Faculty Search Committee  
 2005 Member of PhD Thesis committee for P. Allen (UPenn)