

# MATIAS ZALDARRIAGA

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## Fellowships & Awards

- 2022 *Honorary Doctorate*, University of Buenos Aires, Argentina
- 2021 *Gruber Cosmology Prize*
- 2006 *MacArthur Fellowship*
- 2005 *Gribov Medal* of the European Physical Society
- 2004 *Sloan Fellowship*
- 2003 *Helen B. Warner Prize* of the American Astronomical Society
- 2001 *David and Lucile Packard Fellowship*
- 1998 *Hubble Fellowship*
- 1996 *Barrett Prize* of MIT for originality in astrophysics research

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## Memberships

- 2022 **Elected to American Academy of Arts and Sciences.**
- 2021 **Academia Nacional de Ciencias Exactas, Físicas y Naturales, Argentina (Académico Correspondiente en Estados Unidos)..**
- 2018 **Elected to National Academy of Sciences.**

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## Education

- 1998 **PhD, MASSACHUSETTS INSTITUTE OF TECHNOLOGY.**  
Fluctuations in the cosmic microwave background.
- 1994 **Licenciado en Ciencias Fisicas, UNIVERSITY OF BUENOS AIRES.**

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## Positions

- 7/2020-present **Richard Black Professor of Astrophysics**, Institute for Advanced Study.
- 7/2009-present **Professor of Astrophysics**, Institute for Advanced Study.
- 7/2004-6/2009 **Professor of Astronomy & Physics**, Harvard University.
- 1/2003-9/2004 **Associate Professor**, Harvard University.
- 1/2001-2002 **Assistant Professor**, New York University.
- 9/1998-1/2001 **Long-term member**, Institute for Advanced Study.

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## Supervised Theses

**Seth Olsen**, PhD, Princeton University (2023).

**Oliver Philcox**, PhD, Princeton University (2022).

**Javier Roulet**, PhD, Princeton University (2021).

**Svetlin Valentinov Tassev**, PhD, Harvard University, (2011).

**Claude André Faucher-Giguère**, PhD, Harvard University, (2010).

**Mathew McQuinn**, PhD, Harvard-Smithsonian CfA (2009).

**Oliver Zahn**, PhD, Universität Heidelberg (2007).

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## Publications

### Journal Articles

- 2024 Digvijay Wadekar, Tejaswi Venumadhav, Javier Roulet, Ajit Kumar Mehta, Barak Zackay, Jonathan Mushkin, and Matias Zaldarriaga, “A new search pipeline for gravitational waves with higher-order modes using mode-by-mode filtering”, May 2024, [arXiv:2405.17400](#) [gr-qc].
- 2024 Gabriela Sato-Polito and Matias Zaldarriaga, “The distribution of the gravitational-wave background from supermassive black holes”, June 2024, [arXiv:2406.17010](#) [astro-ph.CO].
- 2024 Javier Roulet, Jonathan Mushkin, Digvijay Wadekar, Tejaswi Venumadhav, Barak Zackay, and Matias Zaldarriaga, “Fast marginalization algorithm for optimizing gravitational wave detection, parameter estimation and sky localization”, April 2024, [arXiv:2404.02435](#) [gr-qc].
- 2024 Giovanni Cabass, Oliver H. E. Philcox, Mikhail M. Ivanov, Kazuyuki Akitsu, Shi-Fan Chen, Marko Simonović, and Matias Zaldarriaga, “BOSS Constraints on Massive Particles during Inflation: The Cosmological Collider in Action”, April 2024, [arXiv:2404.01894](#) [astro-ph.CO].
- 2023 Hang Yu, Javier Roulet, Tejaswi Venumadhav, Barak Zackay, and Matias Zaldarriaga, “Accurate and efficient waveform model for precessing binary black holes”, *Phys. Rev. D*, 108(6):064059, 2023, [arXiv:2306.08774](#) [gr-qc].
- 2023 Digvijay Wadekar, Tejaswi Venumadhav, Ajit Kumar Mehta, Javier Roulet, Seth Olsen, Jonathan Mushkin, Barak Zackay, and Matias Zaldarriaga, “A new approach to template banks of gravitational waves with higher harmonics: reducing matched-filtering cost by over an order of magnitude”, October 2023, [arXiv:2310.15233](#) [gr-qc].
- 2023 Digvijay Wadekar, Javier Roulet, Tejaswi Venumadhav, Ajit Kumar Mehta, Barak Zackay, Jonathan Mushkin, Seth Olsen, and Matias Zaldarriaga, “New black hole mergers in the LIGO-Virgo O3 data from a gravitational wave search including higher-order harmonics”, December 2023, [arXiv:2312.06631](#) [gr-qc].
- 2023 Gabriela Sato-Polito, Matias Zaldarriaga, and Eliot Quataert, “Where are NANOGrav’s big black holes?”, December 2023, [arXiv:2312.06756](#) [astro-ph.CO].

- 2023 Ajit Kumar Mehta, Seth Olsen, Digvijay Wadekar, Javier Roulet, Tejaswi Venumadhav, Jonathan Mushkin, Barak Zackay, and Matias Zaldarriaga, “New binary black hole mergers in the LIGO-Virgo O3b data”, November 2023, [arXiv:2311.06061 \[gr-qc\]](#).
- 2023 Mikhail M. Ivanov, Oliver H. E. Philcox, Giovanni Cabass, Takahiro Nishimichi, Marko Simonović, and Matias Zaldarriaga, “Cosmology with the Galaxy Bispectrum Multipoles: Optimal Estimation and Application to BOSS Data”, February 2023, [arXiv:2302.04414 \[astro-ph.CO\]](#).
- 2023 Horng Sheng Chia, Thomas D. P. Edwards, Digvijay Wadekar, Aaron Zimmerman, Seth Olsen, Javier Roulet, Tejaswi Venumadhav, Barak Zackay, and Matias Zaldarriaga, “In Pursuit of Love: First Templated Search for Compact Objects with Large Tidal Deformabilities in the LIGO-Virgo Data”, May 2023, [arXiv:2306.00050 \[gr-qc\]](#).
- 2023 Giovanni Cabass, Marko Simonović, and Matias Zaldarriaga, “Cosmological Information in Perturbative Forward Modeling”, July 2023, [arXiv:2307.04706 \[astro-ph.CO\]](#).
- 2022 Javier Roulet, Seth Olsen, Jonathan Mushkin, Tousif Islam, Tejaswi Venumadhav, Barak Zackay, and Matias Zaldarriaga, “Removing degeneracy and multimodality in gravitational wave source parameters”, July 2022, [arXiv:2207.03508 \[gr-qc\]](#).
- 2022 Oliver H. E. Philcox, Mikhail M. Ivanov, Giovanni Cabass, Marko Simonović, Matias Zaldarriaga, and Takahiro Nishimichi, “Cosmology with the Redshift-Space Galaxy Bispectrum Monopole at One-Loop Order”, June 2022, [arXiv:2206.02800 \[astro-ph.CO\]](#).
- 2022 Seth Olsen, Tejaswi Venumadhav, Jonathan Mushkin, Javier Roulet, Barak Zackay, and Matias Zaldarriaga, “New binary black hole mergers in the LIGO-Virgo O3a data”, 2022, [arXiv:2201.02252 \[astro-ph.HE\]](#).
- 2022 Mikhail M. Ivanov, Oliver H. E. Philcox, Marko Simonović, Matias Zaldarriaga, Takahiro Nishimichi, and Masahiro Takada, “Cosmological constraints without nonlinear redshift-space distortions”, *Phys. Rev. D*, 105(4):043531, 2022, [arXiv:2110.00006 \[astro-ph.CO\]](#).
- 2022 Mikhail M. Ivanov, Oliver H. E. Philcox, Takahiro Nishimichi, Marko Simonović, Masahiro Takada, and Matias Zaldarriaga, “Precision analysis of the redshift-space galaxy bispectrum”, *Phys. Rev. D*, 105(6):063512, 2022, [arXiv:2110.10161 \[astro-ph.CO\]](#).
- 2022 Giovanni Cabass, Mikhail M. Ivanov, Oliver H. E. Philcox, Marko Simonović, and Matias Zaldarriaga, “Constraints on Single-Field Inflation from the BOSS Galaxy Survey”, January 2022, [arXiv:2201.07238 \[astro-ph.CO\]](#).
- 2022 Giovanni Cabass, Mikhail M. Ivanov, Oliver H. E. Philcox, Marko Simonović, and Matias Zaldarriaga, “Constraints on Multi-Field Inflation from the BOSS Galaxy Survey”, April 2022, [arXiv:2204.01781 \[astro-ph.CO\]](#).
- 2022 Giovanni Cabass, Mikhail M. Ivanov, Oliver H. E. Philcox, Marko Simonovic, and Matias Zaldarriaga, “Constraining Single-Field Inflation with MegaMapper”, November 2022, [arXiv:2211.14899 \[astro-ph.CO\]](#).

- 2021 Barak Zackay, Tejaswi Venumadhav, Javier Roulet, Liang Dai, and Matias Zaldarriaga, “Detecting gravitational waves in data with non-stationary and non-Gaussian noise”, *Phys. Rev. D*, 104(6):063034, 2021, [arXiv:1908.05644](#) [astro-ph.IM].
- 2021 Barak Zackay, Liang Dai, Tejaswi Venumadhav, Javier Roulet, and Matias Zaldarriaga, “Detecting gravitational waves with disparate detector responses: Two new binary black hole mergers”, *Phys. Rev. D*, 104(6):063030, 2021, [arXiv:1910.09528](#) [astro-ph.HE].
- 2021 Marcel Schmittfull, Marko Simonović, Mikhail M. Ivanov, Oliver H. E. Philcox, and Matias Zaldarriaga, “Modeling Galaxies in Redshift Space at the Field Level”, *JCAP*, 05:059, 2021, [arXiv:2012.03334](#) [astro-ph.CO].
- 2021 Javier Roulet, Horng Sheng Chia, Seth Olsen, Liang Dai, Tejaswi Venumadhav, Barak Zackay, and Matias Zaldarriaga, “Distribution of effective spins and masses of binary black holes from the LIGO and Virgo O1–O3a observing runs”, *Phys. Rev. D*, 104(8):083010, 2021, [arXiv:2105.10580](#) [astro-ph.HE].
- 2021 Oliver H. E. Philcox, Mikhail M. Ivanov, Matias Zaldarriaga, Marko Simonovic, and Marcel Schmittfull, “Fewer Mocks and Less Noise: Reducing the Dimensionality of Cosmological Observables with Subspace Projections”, *Phys. Rev. D*, 103(4):043508, 2021, [arXiv:2009.03311](#) [astro-ph.CO].
- 2021 Seth Olsen, Javier Roulet, Horng Sheng Chia, Liang Dai, Tejaswi Venumadhav, Barak Zackay, and Matias Zaldarriaga, “Mapping the likelihood of GW190521 with diverse mass and spin priors”, *Phys. Rev. D*, 104(8):083036, 2021, [arXiv:2106.13821](#) [astro-ph.HE].
- 2021 Horng Sheng Chia, Seth Olsen, Javier Roulet, Liang Dai, Tejaswi Venumadhav, Barak Zackay, and Matias Zaldarriaga, “Boxing Day Surprise: Higher Multipoles and Orbital Precession in GW151226”, 2021, [arXiv:2105.06486](#) [astro-ph.HE].
- 2020 Tejaswi Venumadhav, Barak Zackay, Javier Roulet, Liang Dai, and Matias Zaldarriaga, “New binary black hole mergers in the second observing run of Advanced LIGO and Advanced Virgo”, *Phys. Rev. D*, 101(8):083030, 2020, [arXiv:1904.07214](#) [astro-ph.HE].
- 2020 Javier Roulet, Tejaswi Venumadhav, Barak Zackay, Liang Dai, and Matias Zaldarriaga, “Binary Black Hole Mergers from LIGO/Virgo O1 and O2: Population Inference Combining Confident and Marginal Events”, *Phys. Rev. D*, 102(12):123022, 2020, [arXiv:2008.07014](#) [astro-ph.HE].
- 2020 Oliver H. E. Philcox, Mikhail M. Ivanov, Marko Simonović, and Matias Zaldarriaga, “Combining Full-Shape and BAO Analyses of Galaxy Power Spectra: A 1.6\% CMB-independent constraint on  $H_0$ ”, *JCAP*, 05:032, 2020, [arXiv:2002.04035](#) [astro-ph.CO].
- 2020 Takahiro Nishimichi, Guido D’Amico, Mikhail M. Ivanov, Leonardo Senatore, Marko Simonović, Masahiro Takada, Matias Zaldarriaga, and Pierre Zhang, “Blinded challenge for precision cosmology with large-scale structure: results from effective field theory for the redshift-space galaxy power spectrum”, *Phys. Rev. D*, 102(12):123541, 2020, [arXiv:2003.08277](#) [astro-ph.CO].

- 2020 Mikhail M. Ivanov, Marko Simonović, and Matias Zaldarriaga, “Cosmological Parameters from the BOSS Galaxy Power Spectrum”, *JCAP*, 05:042, 2020, [arXiv:1909.05277](#) [astro-ph.CO].
- 2020 Mikhail M. Ivanov, Marko Simonović, and Matias Zaldarriaga, “Cosmological Parameters and Neutrino Masses from the Final Planck and Full-Shape BOSS Data”, *Phys. Rev. D*, 101(8):083504, 2020, [arXiv:1912.08208](#) [astro-ph.CO].
- 2020 Mikhail M. Ivanov, Evan McDonough, J. Colin Hill, Marko Simonović, Michael W. Toomey, Stephon Alexander, and Matias Zaldarriaga, “Constraining Early Dark Energy with Large-Scale Structure”, *Phys. Rev. D*, 102(10):103502, 2020, [arXiv:2006.11235](#) [astro-ph.CO].
- 2020 Yiwen Huang, Carl-Johan Haster, Salvatore Vitale, Aaron Zimmerman, Javier Roulet, Tejaswi Venumadhav, Barak Zackay, Liang Dai, and Matias Zaldarriaga, “Source properties of the lowest signal-to-noise-ratio binary black hole detections”, *Phys. Rev. D*, 102(10):103024, 2020, [arXiv:2003.04513](#) [gr-qc].
- 2020 Liang Dai, Barak Zackay, Tejaswi Venumadhav, Javier Roulet, and Matias Zaldarriaga, “Search for Lensed Gravitational Waves Including Morse Phase Information: An Intriguing Candidate in O2”, 2020, [arXiv:2007.12709](#) [astro-ph.HE].
- 2019 Barak Zackay, Tejaswi Venumadhav, Liang Dai, Javier Roulet, and Matias Zaldarriaga, “Highly spinning and aligned binary black hole merger in the Advanced LIGO first observing run”, *Phys. Rev. D*, 100(2):023007, 2019, [arXiv:1902.10331](#) [astro-ph.HE].
- 2019 Tejaswi Venumadhav, Barak Zackay, Javier Roulet, Liang Dai, and Matias Zaldarriaga, “New search pipeline for compact binary mergers: Results for binary black holes in the first observing run of Advanced LIGO”, *Phys. Rev. D*, 100(2):023011, 2019, [arXiv:1902.10341](#) [astro-ph.IM].
- 2019 Anže Slosar et al., “Scratches from the Past: Inflationary Archaeology through Features in the Power Spectrum of Primordial Fluctuations”, *Bull. Am. Astron. Soc.*, 51(3):98, 2019, [arXiv:1903.09883](#) [astro-ph.CO].
- 2019 Anže Slosar et al., “Dark Energy and Modified Gravity”, 2019, [arXiv:1903.12016](#) [astro-ph.CO].
- 2019 Marcel Schmittfull, Marko Simonović, Valentin Assassi, and Matias Zaldarriaga, “Modeling Biased Tracers at the Field Level”, *Phys. Rev. D*, 100(4):043514, 2019, [arXiv:1811.10640](#) [astro-ph.CO].
- 2019 Javier Roulet and Matias Zaldarriaga, “Constraints on binary black hole populations from LIGO–Virgo detections”, *Mon. Not. Roy. Astron. Soc.*, 484(3):4216–4229, 2019, [arXiv:1806.10610](#) [astro-ph.HE].
- 2019 Javier Roulet, Liang Dai, Tejaswi Venumadhav, Barak Zackay, and Matias Zaldarriaga, “Template Bank for Compact Binary Coalescence Searches in Gravitational Wave Data: A General Geometric Placement Algorithm”, *Phys. Rev. D*, 99(12):123022, 2019, [arXiv:1904.01683](#) [astro-ph.IM].

- 2019 Jordan Mirocha et al., “Astro2020 Science White Paper: First Stars and Black Holes at Cosmic Dawn with Redshifted 21-cm Observations”, 2019, [arXiv:1903.06218](#) [astro-ph.CO].
- 2019 P. Daniel Meerburg et al., “Primordial Non-Gaussianity”, 2019, [arXiv:1903.04409](#) [astro-ph.CO].
- 2019 Adrian Liu et al., “Cosmology with the Highly Redshifted 21cm Line”, 2019, [arXiv:1903.06240](#) [astro-ph.CO].
- 2019 Juna A. Kollmeier et al., “Astro2020 APC White Paper: Theoretical Astrophysics 2020-2030”, 2019, [arXiv:1912.09992](#) [astro-ph.IM].
- 2019 Daniel Green et al., “Messengers from the Early Universe: Cosmic Neutrinos and Other Light Relics”, *Bull. Am. Astron. Soc.*, 51(7):159, 2019, [arXiv:1903.04763](#) [astro-ph.CO].
- 2019 Steven Furlanetto et al., “Astro2020 Science White Paper: Insights Into the Epoch of Reionization with the Highly-Redshifted 21-cm Line”, 2019, [arXiv:1903.06204](#) [astro-ph.CO].
- 2019 Steven Furlanetto et al., “Astro 2020 Science White Paper: Fundamental Cosmology in the Dark Ages with 21-cm Line Fluctuations”, 2019, [arXiv:1903.06212](#) [astro-ph.CO].
- 2019 Asantha Cooray et al., “Cosmic Dawn and Reionization: Astrophysics in the Final Frontier”, 2019, [arXiv:1903.03629](#) [astro-ph.GA].
- 2019 Marcelo A. Alvarez et al., “Mapping Cosmic Dawn and Reionization: Challenges and Synergies”, 2019, [arXiv:1903.04580](#) [astro-ph.CO].
- 2018 Matias Zaldarriaga, Doron Kushnir, and Juna A. Kollmeier, “The expected spins of gravitational wave sources with isolated field binary progenitors”, *Mon. Not. Roy. Astron. Soc.*, 473(3):4174–4178, 2018, [arXiv:1702.00885](#) [astro-ph.HE].
- 2018 Tejaswi Venumadhav, Liang Dai, Alexander Kaurov, and Matias Zaldarriaga, “Heating of the intergalactic medium by the cosmic microwave background during cosmic dawn”, *Phys. Rev. D*, 98(10):103513, 2018, [arXiv:1804.02406](#) [astro-ph.CO].
- 2018 Marko Simonović, Tobias Baldauf, Matias Zaldarriaga, John Joseph Carrasco, and Juna A. Kollmeier, “Cosmological perturbation theory using the FFT-Log: formalism and connection to QFT loop integrals”, *JCAP*, 04:030, 2018, [arXiv:1708.08130](#) [astro-ph.CO].
- 2018 Nils Schöneberg, Marko Simonović, Julien Lesgourgues, and Matias Zaldarriaga, “Beyond the traditional Line-of-Sight approach of cosmological angular statistics”, *JCAP*, 10:047, 2018, [arXiv:1807.09540](#) [astro-ph.CO].
- 2018 Alexander A. Kaurov, Tejaswi Venumadhav, Liang Dai, and Matias Zaldarriaga, “Implication of the Shape of the EDGES Signal for the 21 cm Power Spectrum”, *Astrophys. J. Lett.*, 864(1):L15, 2018, [arXiv:1805.03254](#) [astro-ph.CO].
- 2018 Yu Feng, Uros Seljak, and Matias Zaldarriaga, “Exploring the posterior surface of the large scale structure reconstruction”, *JCAP*, 07:043, 2018, [arXiv:1804.09687](#) [astro-ph.CO].

- 2017 Leonardo Senatore and Matias Zaldarriaga, “The Effective Field Theory of Large-Scale Structure in the presence of Massive Neutrinos”, 2017, [arXiv:1707.04698](#) [astro-ph.CO].
- 2017 Marcel Schmittfull, Tobias Baldauf, and Matias Zaldarriaga, “Iterative initial condition reconstruction”, *Phys. Rev. D*, 96(2):023505, 2017, [arXiv:1704.06634](#) [astro-ph.CO].
- 2017 Daniel Baumann, Daniel Green, and Matias Zaldarriaga, “Phases of New Physics in the BAO Spectrum”, *JCAP*, 11:007, 2017, [arXiv:1703.00894](#) [astro-ph.CO].
- 2017 Valentin Assassi, Marko Simonović, and Matias Zaldarriaga, “Efficient evaluation of angular power spectra and bispectra”, *JCAP*, 11:054, 2017, [arXiv:1705.05022](#) [astro-ph.CO].
- 2016 Doron Kushnir, Matias Zaldarriaga, Juna A. Kollmeier, and Roni Waldman, “GW150914: Spin based constraints on the merger time of the progenitor system”, *Mon. Not. Roy. Astron. Soc.*, 462(1):844–849, 2016, [arXiv:1605.03839](#) [astro-ph.HE].
- 2016 Tobias Baldauf, Uroš Seljak, Leonardo Senatore, and Matias Zaldarriaga, “Linear response to long wavelength fluctuations using curvature simulations”, *JCAP*, 09:007, 2016, [arXiv:1511.01465](#) [astro-ph.CO].
- 2016 Tobias Baldauf, Emmanuel Schaan, and Matias Zaldarriaga, “On the reach of perturbative methods for dark matter density fields”, *JCAP*, 03:007, 2016, [arXiv:1507.02255](#) [astro-ph.CO].
- 2016 Tobias Baldauf, Emmanuel Schaan, and Matias Zaldarriaga, “On the reach of perturbative descriptions for dark matter displacement fields”, *JCAP*, 03:017, 2016, [arXiv:1505.07098](#) [astro-ph.CO].
- 2016 Tobias Baldauf, Mehrdad Mirbabayi, Marko Simonović, and Matias Zaldarriaga, “LSS constraints with controlled theoretical uncertainties”, 2016, [arXiv:1602.00674](#) [astro-ph.CO].
- 2015 Matias Zaldarriaga and Mehrdad Mirbabayi, “Lagrangian Formulation of the Eulerian-EFT”, 2015, [arXiv:1511.01889](#) [astro-ph.CO].
- 2015 Svetlin Tassev, Daniel J. Eisenstein, Benjamin D. Wandelt, and Matias Zaldarriaga, “sCOLA: The N-body COLA Method Extended to the Spatial Domain”, 2015, [arXiv:1502.07751](#) [astro-ph.CO].
- 2015 Kendrick M. Smith, Leonardo Senatore, and Matias Zaldarriaga, “Optimal analysis of the CMB trispectrum”, 2015, [arXiv:1502.00635](#) [astro-ph.CO].
- 2015 Leonardo Senatore and Matias Zaldarriaga, “The IR-resummed Effective Field Theory of Large Scale Structures”, *JCAP*, 02:013, 2015, [arXiv:1404.5954](#) [astro-ph.CO].
- 2015 Mehrdad Mirbabayi and Matias Zaldarriaga, “Double Soft Limits of Cosmological Correlations”, *JCAP*, 03:025, 2015, [arXiv:1409.6317](#) [hep-th].
- 2015 Mehrdad Mirbabayi and Matias Zaldarriaga, “CMB Anisotropies from a Gradient Mode”, *JCAP*, 03:056, 2015, [arXiv:1409.4777](#) [astro-ph.CO].

- 2015 Mehrdad Mirbabayi, Leonardo Senatore, Eva Silverstein, and Matias Zaldarriaga, “Gravitational Waves and the Scale of Inflation”, *Phys. Rev. D*, 91:063518, 2015, [arXiv:1412.0665 \[hep-th\]](#).
- 2015 Mehrdad Mirbabayi, Fabian Schmidt, and Matias Zaldarriaga, “Biased Tracers and Time Evolution”, *JCAP*, 07:030, 2015, [arXiv:1412.5169 \[astro-ph.CO\]](#).
- 2015 Paolo Creminelli, Diana L. López Nacir, Marko Simonović, Gabriele Trevisan, and Matias Zaldarriaga, “Detecting Primordial  $B$ -Modes after Planck”, *JCAP*, 11:031, 2015, [arXiv:1502.01983 \[astro-ph.CO\]](#).
- 2015 Paolo Creminelli, Sergei Dubovsky, Diana López Nacir, Marko Simonović, Gabriele Trevisan, Giovanni Villadoro, and Matias Zaldarriaga, “Implications of the scalar tilt for the tensor-to-scalar ratio”, *Phys. Rev. D*, 92(12):123528, 2015, [arXiv:1412.0678 \[astro-ph.CO\]](#).
- 2015 Tobias Baldauf, Mehrdad Mirbabayi, Marko Simonović, and Matias Zaldarriaga, “Equivalence Principle and the Baryon Acoustic Peak”, *Phys. Rev. D*, 92(4):043514, 2015, [arXiv:1504.04366 \[astro-ph.CO\]](#).
- 2015 Tobias Baldauf, Lorenzo Mercolli, and Matias Zaldarriaga, “Effective field theory of large scale structure at two loops: The apparent scale dependence of the speed of sound”, *Phys. Rev. D*, 92(12):123007, 2015, [arXiv:1507.02256 \[astro-ph.CO\]](#).
- 2014 Jaiyul Yoo and Matias Zaldarriaga, “Beyond the Linear-Order Relativistic Effect in Galaxy Clustering: Second-Order Gauge-Invariant Formalism”, *Phys. Rev. D*, 90(2):023513, 2014, [arXiv:1406.4140 \[astro-ph.CO\]](#).
- 2014 Leonardo Senatore and Matias Zaldarriaga, “Redshift Space Distortions in the Effective Field Theory of Large Scale Structures”, 2014, [arXiv:1409.1225 \[astro-ph.CO\]](#).
- 2014 Leonardo Senatore, Eva Silverstein, and Matias Zaldarriaga, “New Sources of Gravitational Waves during Inflation”, *JCAP*, 08:016, 2014, [arXiv:1109.0542 \[hep-th\]](#).
- 2014 Fabian Schmidt, Enrico Pajer, and Matias Zaldarriaga, “Large-Scale Structure and Gravitational Waves III: Tidal Effects”, *Phys. Rev. D*, 89(8):083507, 2014, [arXiv:1312.5616 \[astro-ph.CO\]](#).
- 2014 Rafael A. Porto, Leonardo Senatore, and Matias Zaldarriaga, “The Lagrangian-space Effective Field Theory of Large Scale Structures”, *JCAP*, 05:022, 2014, [arXiv:1311.2168 \[astro-ph.CO\]](#).
- 2014 Mehrdad Mirbabayi, Marko Simonović, and Matias Zaldarriaga, “Baryon Acoustic Peak and the Squeezed Limit Bispectrum”, 2014, [arXiv:1412.3796 \[astro-ph.CO\]](#).
- 2014 Marilena LoVerde and Matias Zaldarriaga, “Neutrino clustering around spherical dark matter halos”, *Phys. Rev. D*, 89(6):063502, 2014, [arXiv:1310.6459 \[astro-ph.CO\]](#).
- 2014 Paolo Creminelli, Diana López Nacir, Marko Simonović, Gabriele Trevisan, and Matias Zaldarriaga, “ $\phi^2$  or Not  $\phi^2$ : Testing the Simplest Inflationary Potential”, *Phys. Rev. Lett.*, 112(24):241303, 2014, [arXiv:1404.1065 \[astro-ph.CO\]](#).



- 2014 Paolo Creminelli, Diana López Nacir, Marko Simonović, Gabriele Trevisan, and Matias Zaldarriaga, “ $\phi^2$  Inflation at its Endpoint”, *Phys. Rev. D*, 90(8):083513, 2014, [arXiv:1405.6264](#) [astro-ph.CO].
- 2014 Valentin Assassi, Daniel Baumann, Daniel Green, and Matias Zaldarriaga, “Renormalized Halo Bias”, *JCAP*, 08:056, 2014, [arXiv:1402.5916](#) [astro-ph.CO].
- 2014 Marcelo Alvarez et al., “Testing Inflation with Large Scale Structure: Connecting Hopes with Reality”, 2014, [arXiv:1412.4671](#) [astro-ph.CO].
- 2013 Haoxuan Zheng et al. “Mapping our Universe in 3D with MITEoR”. 2013.
- 2013 Gustavo Joaquin Turiaci and Matias Zaldarriaga, “Non-Gaussianities in Dissipative EFT of Inflation Coupled to a Fluid”, 2013, [arXiv:1310.4531](#) [gr-qc].
- 2013 Svetlin Tassev, Matias Zaldarriaga, and Daniel Eisenstein, “Solving Large Scale Structure in Ten Easy Steps with COLA”, *JCAP*, 06:036, 2013, [arXiv:1301.0322](#) [astro-ph.CO].
- 2013 Leonardo Senatore and Matias Zaldarriaga, “The constancy of  $\zeta$  in single-clock Inflation at all loops”, *JHEP*, 09:148, 2013, [arXiv:1210.6048](#) [hep-th].
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- 2013 Enrico Pajer and Matias Zaldarriaga, “On the Renormalization of the Effective Field Theory of Large Scale Structures”, *JCAP*, 08:037, 2013, [arXiv:1301.7182](#) [astro-ph.CO].
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- 2013 Daniel Green, Matthew Lewandowski, Leonardo Senatore, Eva Silverstein, and Matias Zaldarriaga, “Anomalous Dimensions and Non-Gaussianity”, *JHEP*, 10:171, 2013, [arXiv:1301.2630](#) [hep-th].
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