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Probing gravity at cosmic scales

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BIBLIOGRAPHY

- [1] Y. Akrami et al. “Planck 2018 results. I. Overview and the cosmological legacy of Planck.” In: (2018). arXiv: [1807.06205 \[astro-ph.CO\]](#).
- [2] N. Aghanim et al. “Planck 2018 results. VI. Cosmological parameters.” In: (2018). arXiv: [1807.06209 \[astro-ph.CO\]](#).
- [3] Adam G. Riess, Stefano Casertano, Wenlong Yuan, Lucas M. Macri, and Dan Scolnic. “Large Magellanic Cloud Cepheid Standards Provide a 1% Foundation for the Determination of the Hubble Constant and Stronger Evidence for Physics beyond Λ CDM.” In: *Astrophys. J.* 876.1 (2019), p. 85. DOI: [10.3847/1538-4357/ab1422](#). arXiv: [1903.07603 \[astro-ph.CO\]](#).
- [4] Wendy L. Freedman et al. “The Carnegie-Chicago Hubble Program. VIII. An Independent Determination of the Hubble Constant Based on the Tip of the Red Giant Branch.” In: *The Astrophysical Journal* 882:34 (2019), p. 1. DOI: [10.3847/1538-4357/ab2f73](#). arXiv: [1907.05922 \[astro-ph.CO\]](#).
- [5] Kenneth C. Wong et al. “HoLiCOW XIII. A 2.4% measurement of H_0 from lensed quasars: 5.3 σ tension between early and late-Universe probes.” In: (2019). arXiv: [1907.04869 \[astro-ph.CO\]](#).
- [6] Richard A. Battye, Adam Moss, and Jonathan A. Pearson. “Constraining dark sector perturbations I: cosmic shear and CMB lensing.” In: *JCAP* 1504 (2015), p. 048. DOI: [10.1088/1475-7516/2015/04/048](#). arXiv: [1409.4650 \[astro-ph.CO\]](#).
- [7] Marika Asgari et al. “KiDS+VIKING-450 and DES-Y1 combined: Mitigating baryon feedback uncertainty with COSEBIs.” In: (2019). arXiv: [1910.05336 \[astro-ph.CO\]](#).

- [8] G. E. Addison, Y. Huang, D. J. Watts, C. L. Bennett, M. Halpern, G. Hinshaw, and J. L. Weiland. “Quantifying discordance in the 2015 Planck CMB spectrum.” In: *Astrophys. J.* 818.2 (2016), p. 132. DOI: [10.3847/0004-637X/818/2/132](https://doi.org/10.3847/0004-637X/818/2/132). arXiv: [1511.00055](https://arxiv.org/abs/1511.00055) [[astro-ph.CO](https://arxiv.org/archive/astro-ph)].
- [9] Niall MacCrann, Joe Zuntz, Sarah Bridle, Bhuvnesh Jain, and Matthew R. Becker. “Cosmic Discordance: Are Planck CMB and CFHTLenS weak lensing measurements out of tune?” In: *Mon. Not. Roy. Astron. Soc.* 451.3 (2015), pp. 2877–2888. DOI: [10.1093/mnras/stv1154](https://doi.org/10.1093/mnras/stv1154). arXiv: [1408.4742](https://arxiv.org/abs/1408.4742) [[astro-ph.CO](https://arxiv.org/archive/astro-ph)].
- [10] Shahab Joudaki et al. “CFHTLenS revisited: assessing concordance with Planck including astrophysical systematics.” In: *Mon. Not. Roy. Astron. Soc.* 465.2 (2017), pp. 2033–2052. DOI: [10.1093/mnras/stw2665](https://doi.org/10.1093/mnras/stw2665). arXiv: [1601.05786](https://arxiv.org/abs/1601.05786) [[astro-ph.CO](https://arxiv.org/archive/astro-ph)].
- [11] Jia Liu, Alvaro Ortiz-Vazquez, and J. Colin Hill. “Constraining Multiplicative Bias in CFHTLenS Weak Lensing Shear Data.” In: *Phys. Rev. D* 93.10 (2016), p. 103508. DOI: [10.1103/PhysRevD.93.103508](https://doi.org/10.1103/PhysRevD.93.103508). arXiv: [1601.05720](https://arxiv.org/abs/1601.05720) [[astro-ph.CO](https://arxiv.org/archive/astro-ph)].
- [12] Justin Alsing, Alan F. Heavens, and Andrew H. Jaffe. “Cosmological parameters, shear maps and power spectra from CFHTLenS using Bayesian hierarchical inference.” In: *Mon. Not. Roy. Astron. Soc.* 466.3 (2017), pp. 3272–3292. DOI: [10.1093/mnras/stw3161](https://doi.org/10.1093/mnras/stw3161). arXiv: [1607.00008](https://arxiv.org/abs/1607.00008) [[astro-ph.CO](https://arxiv.org/archive/astro-ph)].
- [13] Luca Amendola and Shinji Tsujikawa. *Dark Energy*. Cambridge University Press, 2015.
- [14] Michel Chevallier and David Polarski. “Accelerating universes with scaling dark matter.” In: *Int. J. Mod. Phys. D* 10 (2001), pp. 213–224. DOI: [10.1142/S0218271801000822](https://doi.org/10.1142/S0218271801000822). arXiv: [gr-qc/0009008](https://arxiv.org/abs/gr-qc/0009008) [[gr-qc](https://arxiv.org/archive/gr-qc)].

- [15] Eric V. Linder. “Exploring the expansion history of the universe.” In: *Phys. Rev. Lett.* 90 (2003), p. 091301. DOI: [10.1103/PhysRevLett.90.091301](https://doi.org/10.1103/PhysRevLett.90.091301). arXiv: [astro-ph/0208512](https://arxiv.org/abs/astro-ph/0208512) [[astro-ph](#)].
- [16] Houjun Mo, Frank C. van den Bosch, and Simon White. *Galaxy Formation and Evolution*. 2010.
- [17] D. Branch and G. A. Tammann. “Type ia supernovae as standard candles.” In: *Ann. Rev. Astron. Astrophys.* 30 (1992), pp. 359–389. DOI: [10.1146/annurev.aa.30.090192.002043](https://doi.org/10.1146/annurev.aa.30.090192.002043).
- [18] S. Perlmutter et al. “Measurements of Ω and Λ from 42 high redshift supernovae.” In: *Astrophys. J.* 517 (1999), pp. 565–586. DOI: [10.1086/307221](https://doi.org/10.1086/307221). arXiv: [astro-ph/9812133](https://arxiv.org/abs/astro-ph/9812133) [[astro-ph](#)].
- [19] Adam G. Riess et al. “Observational evidence from supernovae for an accelerating universe and a cosmological constant.” In: *Astron. J.* 116 (1998), pp. 1009–1038. DOI: [10.1086/300499](https://doi.org/10.1086/300499). arXiv: [astro-ph/9805201](https://arxiv.org/abs/astro-ph/9805201) [[astro-ph](#)].
- [20] Donald G. York et al. “The Sloan Digital Sky Survey: Technical Summary.” In: *Astron. J.* 120 (2000), pp. 1579–1587. DOI: [10.1086/301513](https://doi.org/10.1086/301513). arXiv: [astro-ph/0006396](https://arxiv.org/abs/astro-ph/0006396) [[astro-ph](#)].
- [21] Bhuvnesh Jain and Uros Seljak. “Cosmological model predictions for weak lensing: Linear and nonlinear regimes.” In: *Astrophys. J.* 484 (1997), p. 560. DOI: [10.1086/304372](https://doi.org/10.1086/304372). arXiv: [astro-ph/9611077](https://arxiv.org/abs/astro-ph/9611077) [[astro-ph](#)].
- [22] Bradley W. Carroll and Dale A. Ostlie. *An Introduction to Modern Astrophysics*. Ed. by San Francisco: Pearson Addison-Wesley. 2nd (International). 2007.
- [23] Austin Joyce, Bhuvnesh Jain, Justin Khoury, and Mark Trodden. “Beyond the Cosmological Standard Model.” In: *Phys. Rept.* 568 (2015), pp. 1–98. DOI: [10.1016/j.physrep.2014.12.002](https://doi.org/10.1016/j.physrep.2014.12.002). arXiv: [1407.0059](https://arxiv.org/abs/1407.0059) [[astro-ph.CO](#)].

- [24] C. Brans and R. H. Dicke. "Mach's Principle and a Relativistic Theory of Gravitation." In: *Phys. Rev.* 124 (3 1961), pp. 925–935. DOI: [10.1103/PhysRev.124.925](https://doi.org/10.1103/PhysRev.124.925). URL: <https://link.aps.org/doi/10.1103/PhysRev.124.925>.
- [25] Timothy Clifton, Pedro G. Ferreira, Antonio Padilla, and Constantinos Skordis. "Modified Gravity and Cosmology." In: *Phys. Rept.* 513 (2012), pp. 1–189. DOI: [10.1016/j.physrep.2012.01.001](https://doi.org/10.1016/j.physrep.2012.01.001). arXiv: [1106.2476](https://arxiv.org/abs/1106.2476) [astro-ph.CO].
- [26] Ryo Nagata, Takeshi Chiba, and Naoshi Sugiyama. "WMAP constraints on scalar-tensor cosmology and the variation of the gravitational constant." In: *Phys. Rev. D* 69 (2004), p. 083512. DOI: [10.1103/PhysRevD.69.083512](https://doi.org/10.1103/PhysRevD.69.083512). arXiv: [astro-ph/0311274](https://arxiv.org/abs/astro-ph/0311274) [astro-ph].
- [27] Antonio De Felice and Shinji Tsujikawa. "Generalized Galileon cosmology." In: *Phys. Rev. D* 84 (2011), p. 124029. DOI: [10.1103/PhysRevD.84.124029](https://doi.org/10.1103/PhysRevD.84.124029). arXiv: [1008.4236](https://arxiv.org/abs/1008.4236) [hep-th].
- [28] Alberto Nicolis, Riccardo Rattazzi, and Enrico Trincherini. "The Galileon as a local modification of gravity." In: *Phys. Rev. D* 79 (2009), p. 064036. DOI: [10.1103/PhysRevD.79.064036](https://doi.org/10.1103/PhysRevD.79.064036). arXiv: [0811.2197](https://arxiv.org/abs/0811.2197) [hep-th].
- [29] Antonio De Felice and Shinji Tsujikawa. "Cosmology of a covariant Galileon field." In: *Phys. Rev. Lett.* 105 (2010), p. 111301. DOI: [10.1103/PhysRevLett.105.111301](https://doi.org/10.1103/PhysRevLett.105.111301). arXiv: [1007.2700](https://arxiv.org/abs/1007.2700) [astro-ph.CO].
- [30] Savvas Nesseris, Antonio De Felice, and Shinji Tsujikawa. "Observational constraints on Galileon cosmology." In: *Phys. Rev. D* 82 (2010), p. 124054. DOI: [10.1103/PhysRevD.82.124054](https://doi.org/10.1103/PhysRevD.82.124054). arXiv: [1010.0407](https://arxiv.org/abs/1010.0407) [astro-ph.CO].

- [31] Alexandre Barreira, Baojiu Li, Carlton Baugh, and Silvia Pascoli. “The observational status of Galileon gravity after Planck.” In: *JCAP* 1408 (2014), p. 059. DOI: [10.1088/1475-7516/2014/08/059](https://doi.org/10.1088/1475-7516/2014/08/059). arXiv: [1406.0485](https://arxiv.org/abs/1406.0485) [[astro-ph.CO](#)].
- [32] Simone Peirone, Noemi Frusciante, Bin Hu, Marco Raveri, and Alessandra Silvestri. “Do current cosmological observations rule out all Covariant Galileons?” In: *Phys. Rev. D* 97.6 (2018), p. 063518. DOI: [10.1103/PhysRevD.97.063518](https://doi.org/10.1103/PhysRevD.97.063518). arXiv: [1711.04760](https://arxiv.org/abs/1711.04760) [[astro-ph.CO](#)].
- [33] Janina Renk, Miguel Zumalacarregui, Francesco Montanari, and Alexandre Barreira. “Galileon Gravity in Light of ISW, CMB, BAO and H_0 data.” In: *JCAP* 1710.10 (2017), p. 020. DOI: [10.1088/1475-7516/2017/10/020](https://doi.org/10.1088/1475-7516/2017/10/020). arXiv: [1707.02263](https://arxiv.org/abs/1707.02263) [[astro-ph.CO](#)].
- [34] Gregory Walter Horndeski. “Second-order scalar-tensor field equations in a four-dimensional space.” In: *Int. J. Theor. Phys.* 10 (1974), pp. 363–384. DOI: [10.1007/BF01807638](https://doi.org/10.1007/BF01807638).
- [35] C. Deffayet, Xian Gao, D. A. Steer, and G. Zahariade. “From k-essence to generalised Galileons.” In: *Phys. Rev. D* 84 (2011), p. 064039. DOI: [10.1103/PhysRevD.84.064039](https://doi.org/10.1103/PhysRevD.84.064039). arXiv: [1103.3260](https://arxiv.org/abs/1103.3260) [[hep-th](#)].
- [36] Tsutomu Kobayashi, Masahide Yamaguchi, and Jun’ichi Yokoyama. “Generalized G-inflation: Inflation with the most general second-order field equations.” In: *Prog. Theor. Phys.* 126 (2011), pp. 511–529. DOI: [10.1143/PTP.126.511](https://doi.org/10.1143/PTP.126.511). arXiv: [1105.5723](https://arxiv.org/abs/1105.5723) [[hep-th](#)].
- [37] M. Ostrogradsky. “Mémoires sur les équations différentielles, relatives au problème des isopérimètres.” In: *Mem. Acad. St. Petersbourg* 6.4 (1850), pp. 385–517.
- [38] Jérôme Gleyzes, David Langlois, Federico Piazza, and Filippo Vernizzi. “Exploring gravitational theories beyond Horndeski.” In: *JCAP* 1502 (2015), p. 018. DOI: [10.1088/1475-7516/2015/02/018](https://doi.org/10.1088/1475-7516/2015/02/018). arXiv: [1408.1952](https://arxiv.org/abs/1408.1952) [[astro-ph.CO](#)].

- [39] Jérôme Gleyzes, David Langlois, Federico Piazza, and Filippo Vernizzi. “Healthy theories beyond Horndeski.” In: *Phys. Rev. Lett.* 114.21 (2015), p. 211101. DOI: [10.1103/PhysRevLett.114.211101](https://doi.org/10.1103/PhysRevLett.114.211101). arXiv: [1404.6495](https://arxiv.org/abs/1404.6495) [hep-th].
- [40] David Langlois and Karim Noui. “Degenerate higher derivative theories beyond Horndeski: evading the Ostrogradski instability.” In: *JCAP* 1602.02 (2016), p. 034. DOI: [10.1088/1475-7516/2016/02/034](https://doi.org/10.1088/1475-7516/2016/02/034). arXiv: [1510.06930](https://arxiv.org/abs/1510.06930) [gr-qc].
- [41] David Langlois and Karim Noui. “Hamiltonian analysis of higher derivative scalar-tensor theories.” In: *JCAP* 1607.07 (2016), p. 016. DOI: [10.1088/1475-7516/2016/07/016](https://doi.org/10.1088/1475-7516/2016/07/016). arXiv: [1512.06820](https://arxiv.org/abs/1512.06820) [gr-qc].
- [42] Giulia Gubitosi, Federico Piazza, and Filippo Vernizzi. “The Effective Field Theory of Dark Energy.” In: *JCAP* 1302 (2013). [JCAP1302,032(2013)], p. 032. DOI: [10.1088/1475-7516/2013/02/032](https://doi.org/10.1088/1475-7516/2013/02/032). arXiv: [1210.0201](https://arxiv.org/abs/1210.0201) [hep-th].
- [43] Jolyon K. Bloomfield, Éanna É. Flanagan, Minjoon Park, and Scott Watson. “Dark energy or modified gravity? An effective field theory approach.” In: *JCAP* 1308 (2013), p. 010. DOI: [10.1088/1475-7516/2013/08/010](https://doi.org/10.1088/1475-7516/2013/08/010). arXiv: [1211.7054](https://arxiv.org/abs/1211.7054) [astro-ph.CO].
- [44] Jérôme Gleyzes, David Langlois, Federico Piazza, and Filippo Vernizzi. “Essential Building Blocks of Dark Energy.” In: *JCAP* 1308 (2013), p. 025. DOI: [10.1088/1475-7516/2013/08/025](https://doi.org/10.1088/1475-7516/2013/08/025). arXiv: [1304.4840](https://arxiv.org/abs/1304.4840) [hep-th].
- [45] Jolyon Bloomfield. “A Simplified Approach to General Scalar-Tensor Theories.” In: *JCAP* 1312 (2013), p. 044. DOI: [10.1088/1475-7516/2013/12/044](https://doi.org/10.1088/1475-7516/2013/12/044). arXiv: [1304.6712](https://arxiv.org/abs/1304.6712) [astro-ph.CO].
- [46] Federico Piazza and Filippo Vernizzi. “Effective Field Theory of Cosmological Perturbations.” In: *Class. Quant. Grav.* 30 (2013), p. 214007. DOI: [10.1088/0264-9381/30/21/214007](https://doi.org/10.1088/0264-9381/30/21/214007). arXiv: [1307.4350](https://arxiv.org/abs/1307.4350) [hep-th].

- [47] Emilio Bellini and Ignacy Sawicki. “Maximal freedom at minimum cost: linear large-scale structure in general modifications of gravity.” In: *JCAP* 1407 (2014), p. 050. DOI: [10.1088/1475-7516/2014/07/050](https://doi.org/10.1088/1475-7516/2014/07/050). arXiv: [1404.3713](https://arxiv.org/abs/1404.3713) [[astro-ph.CO](#)].
- [48] Jérôme Gleyzes, David Langlois, and Filippo Vernizzi. “A unifying description of dark energy.” In: *Int. J. Mod. Phys. D* 23.13 (2015), p. 1443010. DOI: [10.1142/S021827181443010X](https://doi.org/10.1142/S021827181443010X). arXiv: [1411.3712](https://arxiv.org/abs/1411.3712) [[hep-th](#)].
- [49] Jérôme Gleyzes, David Langlois, Michele Mancarella, and Filippo Vernizzi. “Effective Theory of Dark Energy at Redshift Survey Scales.” In: *JCAP* 1602.02 (2016), p. 056. DOI: [10.1088/1475-7516/2016/02/056](https://doi.org/10.1088/1475-7516/2016/02/056). arXiv: [1509.02191](https://arxiv.org/abs/1509.02191) [[astro-ph.CO](#)].
- [50] Jérôme Gleyzes, David Langlois, Michele Mancarella, and Filippo Vernizzi. “Effective Theory of Interacting Dark Energy.” In: *JCAP* 1508.08 (2015), p. 054. DOI: [10.1088/1475-7516/2015/08/054](https://doi.org/10.1088/1475-7516/2015/08/054). arXiv: [1504.05481](https://arxiv.org/abs/1504.05481) [[astro-ph.CO](#)].
- [51] Antony Lewis, Anthony Challinor, and Anthony Lasenby. “Efficient computation of CMB anisotropies in closed FRW models.” In: *Astrophys. J.* 538 (2000), pp. 473–476. DOI: [10.1086/309179](https://doi.org/10.1086/309179). arXiv: [astro-ph/9911177](https://arxiv.org/abs/astro-ph/9911177) [[astro-ph](#)].
- [52] Bin Hu, Marco Raveri, Noemi Frusciante, and Alessandra Silvestri. “Effective Field Theory of Cosmic Acceleration: an implementation in CAMB.” In: *Phys. Rev. D* 89.10 (2014), p. 103530. DOI: [10.1103/PhysRevD.89.103530](https://doi.org/10.1103/PhysRevD.89.103530). arXiv: [1312.5742](https://arxiv.org/abs/1312.5742) [[astro-ph.CO](#)].
- [53] Marco Raveri, Bin Hu, Noemi Frusciante, and Alessandra Silvestri. “Effective Field Theory of Cosmic Acceleration: constraining dark energy with CMB data.” In: *Phys. Rev. D* 90.4 (2014), p. 043513. DOI: [10.1103/PhysRevD.90.043513](https://doi.org/10.1103/PhysRevD.90.043513). arXiv: [1405.1022](https://arxiv.org/abs/1405.1022) [[astro-ph.CO](#)].

- [54] Alireza Hojjati, Levon Pogosian, Alessandra Silvestri, and Starla Talbot. “Practical solutions for perturbed $f(R)$ gravity.” In: *Phys. Rev. D* 86 (2012), p. 123503. DOI: [10.1103/PhysRevD.86.123503](https://doi.org/10.1103/PhysRevD.86.123503). arXiv: [1210.6880](https://arxiv.org/abs/1210.6880) [[astro-ph.CO](#)].
- [55] Lucas Lombriser, Jaiyul Yoo, and Kazuya Koyama. “Relativistic effects in galaxy clustering in a parametrized post-Friedmann universe.” In: *Phys. Rev. D* 87 (2013), p. 104019. DOI: [10.1103/PhysRevD.87.104019](https://doi.org/10.1103/PhysRevD.87.104019). arXiv: [1301.3132](https://arxiv.org/abs/1301.3132) [[astro-ph.CO](#)].
- [56] Johannes Noller, Francesca von Braun-Bates, and Pedro G. Ferreira. “Relativistic scalar fields and the quasistatic approximation in theories of modified gravity.” In: *Phys. Rev. D* 89.2 (2014), p. 023521. DOI: [10.1103/PhysRevD.89.023521](https://doi.org/10.1103/PhysRevD.89.023521). arXiv: [1310.3266](https://arxiv.org/abs/1310.3266) [[astro-ph.CO](#)].
- [57] E. Bellini et al. “Comparison of Einstein-Boltzmann solvers for testing general relativity.” In: *Phys. Rev. D* 97.2 (2018), p. 023520. DOI: [10.1103/PhysRevD.97.023520](https://doi.org/10.1103/PhysRevD.97.023520). arXiv: [1709.09135](https://arxiv.org/abs/1709.09135) [[astro-ph.CO](#)].
- [58] Antony Lewis and Sarah Bridle. “Cosmological parameters from CMB and other data: A Monte Carlo approach.” In: *Phys. Rev. D* 66 (2002), p. 103511. DOI: [10.1103/PhysRevD.66.103511](https://doi.org/10.1103/PhysRevD.66.103511). arXiv: [astro-ph/0205436](https://arxiv.org/abs/astro-ph/0205436) [[astro-ph](#)].
- [59] Antonio De Felice, Noemi Frusciante, and Georgios Papadomanolakis. “On the stability conditions for theories of modified gravity in the presence of matter fields.” In: *JCAP* 1703.03 (2017), p. 027. DOI: [10.1088/1475-7516/2017/03/027](https://doi.org/10.1088/1475-7516/2017/03/027). arXiv: [1609.03599](https://arxiv.org/abs/1609.03599) [[gr-qc](#)].
- [60] Noemi Frusciante, Georgios Papadomanolakis, Simone Peirone, and Alessandra Silvestri. “The role of the tachyonic instability in Horndeski gravity.” In: *JCAP* 1902.02 (2019), p. 029. DOI: [10.1088/1475-7516/2019/02/029](https://doi.org/10.1088/1475-7516/2019/02/029). arXiv: [1810.03461](https://arxiv.org/abs/1810.03461) [[gr-qc](#)].

- [61] B. P. Abbott et al. "GW170817: Observation of Gravitational Waves from a Binary Neutron Star Inspiral." In: *Phys. Rev. Lett.* 119.16 (2017), p. 161101. DOI: [10.1103/PhysRevLett.119.161101](https://doi.org/10.1103/PhysRevLett.119.161101). arXiv: [1710.05832](https://arxiv.org/abs/1710.05832) [gr-qc].
- [62] B. P. Abbott et al. "Gravitational Waves and Gamma-rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A." In: *Astrophys. J.* 848.2 (2017), p. L13. DOI: [10.3847/2041-8213/aa920c](https://doi.org/10.3847/2041-8213/aa920c). arXiv: [1710.05834](https://arxiv.org/abs/1710.05834) [astro-ph.HE].
- [63] D. A. Coulter et al. "Swope Supernova Survey 2017a (SSS17a), the Optical Counterpart to a Gravitational Wave Source." In: *Science* (2017). DOI: [10.1126/science.aap9811](https://doi.org/10.1126/science.aap9811). arXiv: [1710.05452](https://arxiv.org/abs/1710.05452) [astro-ph.HE].
- [64] Lucas Lombriser and Andy Taylor. "Breaking a Dark Degeneracy with Gravitational Waves." In: (2015). arXiv: [1509.08458](https://arxiv.org/abs/1509.08458) [astro-ph.CO].
- [65] Lucas Lombriser and Nelson A. Lima. "Challenges to Self-Acceleration in Modified Gravity." In: (2016). arXiv: [1602.07670](https://arxiv.org/abs/1602.07670) [astro-ph.CO].
- [66] Philippe Brax, Clare Burrage, and Anne-Christine Davis. "The Speed of Galileon Gravity." In: *JCAP* 1603.03 (2016), p. 004. DOI: [10.1088/1475-7516/2016/03/004](https://doi.org/10.1088/1475-7516/2016/03/004). arXiv: [1510.03701](https://arxiv.org/abs/1510.03701) [gr-qc].
- [67] Dario Bettoni, Jose María Ezquiaga, Kurt Hinterbichler, and Miguel Zumalacárregui. "Speed of Gravitational Waves and the Fate of Scalar-Tensor Gravity." In: *Phys. Rev. D* 95.8 (2017), p. 084029. DOI: [10.1103/PhysRevD.95.084029](https://doi.org/10.1103/PhysRevD.95.084029). arXiv: [1608.01982](https://arxiv.org/abs/1608.01982) [gr-qc].
- [68] Paolo Creminelli and Filippo Vernizzi. "Dark Energy after GW170817." In: (2017). arXiv: [1710.05877](https://arxiv.org/abs/1710.05877) [astro-ph.CO].

- [69] Jeremy Sakstein and Bhuvnesh Jain. “Implications of the Neutron Star Merger GW₁₇₀₈₁₇ for Cosmological Scalar-Tensor Theories.” In: (2017). arXiv: [1710.05893 \[astro-ph.CO\]](#).
- [70] Jose María Ezquiaga and Miguel Zumalacárregui. “Dark Energy after GW₁₇₀₈₁₇.” In: (2017). arXiv: [1710.05901 \[astro-ph.CO\]](#).
- [71] T. Baker, E. Bellini, P. G. Ferreira, M. Lagos, J. Noller, and I. Sawicki. “Strong constraints on cosmological gravity from GW₁₇₀₈₁₇ and GRB 170817A.” In: (2017). arXiv: [1710.06394 \[astro-ph.CO\]](#).
- [72] Shun Arai and Atsushi Nishizawa. “Generalized framework for testing gravity with gravitational-wave propagation. II. Constraints on Horndeski theory.” In: (2017). arXiv: [1711.03776 \[gr-qc\]](#).
- [73] Yungui Gong, Eleftherios Papantonopoulos, and Zhu Yi. “Constraints on Scalar-Tensor Theory of Gravity by the Recent Observational Results on Gravitational Waves.” In: (2017). arXiv: [1711.04102 \[gr-qc\]](#).
- [74] Soumya Jana, Girish Kumar Chakravarty, and Subhendra Mohanty. “Constraints on Born-Infeld gravity from the speed of gravitational waves after GW₁₇₀₈₁₇ and GRB 170817A.” In: (2017). arXiv: [1711.04137 \[gr-qc\]](#).
- [75] Luca Amendola, Martin Kunz, Ippocratis D. Saltas, and Ignacy Sawicki. “The fate of large-scale structure in modified gravity after GW₁₇₀₈₁₇ and GRB_{170817A}.” In: (2017). arXiv: [1711.04825 \[astro-ph.CO\]](#).
- [76] Marco Crisostomi and Kazuya Koyama. “Vainshtein mechanism after GW₁₇₀₈₁₇.” In: (2017). arXiv: [1711.06661 \[astro-ph.CO\]](#).
- [77] David Langlois, Ryo Saito, Daisuke Yamauchi, and Karim Noui. “Scalar-tensor theories and modified gravity in the wake of GW₁₇₀₈₁₇.” In: (2017). arXiv: [1711.07403 \[gr-qc\]](#).

- [78] Claudia de Rham and Scott Melville. “Gravitational Rainbows: LIGO and Dark Energy at its Cutoff.” In: *Phys. Rev. Lett.* 121.22 (2018), p. 221101. DOI: [10.1103/PhysRevLett.121.221101](https://doi.org/10.1103/PhysRevLett.121.221101). arXiv: [1806.09417](https://arxiv.org/abs/1806.09417) [hep-th].
- [79] Shahab Joudaki et al. “KiDS-450: Testing extensions to the standard cosmological model.” In: (2016). arXiv: [1610.04606](https://arxiv.org/abs/1610.04606) [astro-ph.CO].
- [80] Simone Peirone, Matteo Martinelli, Marco Raveri, and Alessandra Silvestri. “Impact of theoretical priors in cosmological analyses: the case of single field quintessence.” In: *Phys. Rev. D* 96.6 (2017), p. 063524. DOI: [10.1103/PhysRevD.96.063524](https://doi.org/10.1103/PhysRevD.96.063524). arXiv: [1702.06526](https://arxiv.org/abs/1702.06526) [astro-ph.CO].
- [81] Simone Peirone, Kazuya Koyama, Levon Pogosian, Marco Raveri, and Alessandra Silvestri. “Large-scale structure phenomenology of viable Horndeski theories.” In: *Phys. Rev. D* 97.4 (2018), p. 043519. DOI: [10.1103/PhysRevD.97.043519](https://doi.org/10.1103/PhysRevD.97.043519). arXiv: [1712.00444](https://arxiv.org/abs/1712.00444) [astro-ph.CO].
- [82] Juan Espejo, Simone Peirone, Marco Raveri, Kazuya Koyama, Levon Pogosian, and Alessandra Silvestri. “Phenomenology of Large Scale Structure in scalar-tensor theories: joint prior covariance of w_{DE} , Σ and μ in Horndeski.” In: *Phys. Rev. D* 99.2 (2019), p. 023512. DOI: [10.1103/PhysRevD.99.023512](https://doi.org/10.1103/PhysRevD.99.023512). arXiv: [1809.01121](https://arxiv.org/abs/1809.01121) [astro-ph.CO].
- [83] Simone Peirone, Giampaolo Benevento, Noemi Frusciante, and Shinji Tsujikawa. “Cosmological constraints and phenomenology of a beyond-Horndeski model.” In: *Phys. Rev. D* 100.6 (2019), p. 063509. DOI: [10.1103/PhysRevD.100.063509](https://doi.org/10.1103/PhysRevD.100.063509). arXiv: [1905.11364](https://arxiv.org/abs/1905.11364) [astro-ph.CO].
- [84] Simone Peirone, Giampaolo Benevento, Noemi Frusciante, and Shinji Tsujikawa. “Cosmological data favor Galileon ghost con-

- densate over Λ CDM." In: *Phys. Rev. D* 100.6 (2019), p. 063540. DOI: [10.1103/PhysRevD.100.063540](https://doi.org/10.1103/PhysRevD.100.063540). arXiv: [1905.05166](https://arxiv.org/abs/1905.05166) [[astro-ph.CO](#)].
- [85] T. D. Kitching et al. "3D Cosmic Shear: Cosmology from CFHTLenS." In: *Mon. Not. Roy. Astron. Soc.* 442.2 (2014), pp. 1326–1349. DOI: [10.1093/mnras/stu934](https://doi.org/10.1093/mnras/stu934). arXiv: [1401.6842](https://arxiv.org/abs/1401.6842) [[astro-ph.CO](#)].
- [86] H. Hildebrandt et al. "KiDS-450: Cosmological parameter constraints from tomographic weak gravitational lensing." In: (2016). arXiv: [1606.05338](https://arxiv.org/abs/1606.05338) [[astro-ph.CO](#)].
- [87] R. Adam et al. "Planck 2015 results. I. Overview of products and scientific results." In: *Astron. Astrophys.* 594 (2016), A1. DOI: [10.1051/0004-6361/201527101](https://doi.org/10.1051/0004-6361/201527101). arXiv: [1502.01582](https://arxiv.org/abs/1502.01582) [[astro-ph.CO](#)].
- [88] Marco Raveri. "Are cosmological data sets consistent with each other within the Λ cold dark matter model?" In: *Phys. Rev. D* 93.4 (2016), p. 043522. DOI: [10.1103/PhysRevD.93.043522](https://doi.org/10.1103/PhysRevD.93.043522). arXiv: [1510.00688](https://arxiv.org/abs/1510.00688) [[astro-ph.CO](#)].
- [89] Sebastian Seehars, Sebastian Grandis, Adam Amara, and Alexandre Refregier. "Quantifying Concordance in Cosmology." In: *Phys. Rev. D* 93.10 (2016), p. 103507. DOI: [10.1103/PhysRevD.93.103507](https://doi.org/10.1103/PhysRevD.93.103507). arXiv: [1510.08483](https://arxiv.org/abs/1510.08483) [[astro-ph.CO](#)].
- [90] S. Grandis, S. Seehars, A. Refregier, A. Amara, and A. Nicola. "Information Gains from Cosmological Probes." In: *JCAP* 1605.05 (2016), p. 034. DOI: [10.1088/1475-7516/2016/05/034](https://doi.org/10.1088/1475-7516/2016/05/034). arXiv: [1510.06422](https://arxiv.org/abs/1510.06422) [[astro-ph.CO](#)].
- [91] N. Aghanim et al. "Planck 2015 results. XI. CMB power spectra, likelihoods, and robustness of parameters." In: *Astron. Astrophys.* 594 (2016), A11. DOI: [10.1051/0004-6361/201526926](https://doi.org/10.1051/0004-6361/201526926). arXiv: [1507.02704](https://arxiv.org/abs/1507.02704) [[astro-ph.CO](#)].
- [92] F. Köhlinger et al. "KiDS-450: The tomographic weak lensing power spectrum and constraints on cosmological parameters." In: (2017). arXiv: [1706.02892](https://arxiv.org/abs/1706.02892) [[astro-ph.CO](#)].

- [93] Edo van Uitert et al. “KiDS+GAMA: Cosmology constraints from a joint analysis of cosmic shear, galaxy-galaxy lensing and angular clustering.” In: (2017). arXiv: [1706.05004 \[astro-ph.CO\]](#).
- [94] Jan Hamann and Jasper Hasenkamp. “A new life for sterile neutrinos: resolving inconsistencies using hot dark matter.” In: *JCAP* 1310 (2013), p. 044. DOI: [10.1088/1475-7516/2013/10/044](#). arXiv: [1308.3255 \[astro-ph.CO\]](#).
- [95] Eleonora Di Valentino, Alessandro Melchiorri, and Joseph Silk. “Beyond six parameters: extending Λ CDM.” In: *Phys. Rev. D* 92.12 (2015), p. 121302. DOI: [10.1103/PhysRevD.92.121302](#). arXiv: [1507.06646 \[astro-ph.CO\]](#).
- [96] David J. E. Marsh, Philip Bull, Pedro G. Ferreira, and Andrew Pontzen. “Quintessence in a quandary: Prior dependence in dark energy models.” In: *Phys. Rev. D* 90.10 (2014), p. 105023. DOI: [10.1103/PhysRevD.90.105023](#). arXiv: [1406.2301 \[astro-ph.CO\]](#).
- [97] Wayne Hu and Ignacy Sawicki. “A Parameterized Post-Friedmann Framework for Modified Gravity.” In: *Phys. Rev. D* 76 (2007), p. 104043. DOI: [10.1103/PhysRevD.76.104043](#). arXiv: [0708.1190 \[astro-ph\]](#).
- [98] Wayne Hu. “Parameterized Post-Friedmann Signatures of Acceleration in the CMB.” In: *Phys. Rev. D* 77 (2008), p. 103524. DOI: [10.1103/PhysRevD.77.103524](#). arXiv: [0801.2433 \[astro-ph\]](#).
- [99] Wenjuan Fang, Wayne Hu, and Antony Lewis. “Crossing the Phantom Divide with Parameterized Post-Friedmann Dark Energy.” In: *Phys. Rev. D* 78 (2008), p. 087303. DOI: [10.1103/PhysRevD.78.087303](#). arXiv: [0808.3125 \[astro-ph\]](#).
- [100] P. Creminelli, G. D’Amico, J. Noreña, and F. Vernizzi. “The effective theory of quintessence: the $w < -1$ side unveiled.” In: *JCAP* 2, 018 (Feb. 2009), p. 018. DOI: [10.1088/1475-7516/2009/02/018](#). arXiv: [0811.0827](#).

- [101] A. Vikman. "Can dark energy evolve to the phantom?" In: *Phys. Rev. D* 71.2, 023515 (Jan. 2005), p. 023515. DOI: [10.1103/PhysRevD.71.023515](https://doi.org/10.1103/PhysRevD.71.023515). eprint: [astro-ph/0407107](https://arxiv.org/abs/astro-ph/0407107).
- [102] W. Hu. "Crossing the phantom divide: Dark energy internal degrees of freedom." In: *Phys. Rev. D* 71.4, 047301 (Feb. 2005), p. 047301. DOI: [10.1103/PhysRevD.71.047301](https://doi.org/10.1103/PhysRevD.71.047301). eprint: [astro-ph/0410680](https://arxiv.org/abs/astro-ph/0410680).
- [103] R. R. Caldwell and M. Doran. "Dark-energy evolution across the cosmological-constant boundary." In: *Phys. Rev. D* 72.4, 043527 (Aug. 2005), p. 043527. DOI: [10.1103/PhysRevD.72.043527](https://doi.org/10.1103/PhysRevD.72.043527). eprint: [astro-ph/0501104](https://arxiv.org/abs/astro-ph/0501104).
- [104] S. M. Carroll, M. Hoffman, and M. Trodden. "Can the dark energy equation-of-state parameter w be less than -1 ?" In: *Phys. Rev. D* 68.2, 023509 (July 2003), p. 023509. DOI: [10.1103/PhysRevD.68.023509](https://doi.org/10.1103/PhysRevD.68.023509). eprint: [astro-ph/0301273](https://arxiv.org/abs/astro-ph/0301273).
- [105] S. M. Carroll, A. D. Felice, and M. Trodden. "Can we be tricked into thinking that w is less than -1 ?" In: *Phys. Rev. D* 71.2, 023525 (Jan. 2005), p. 023525. DOI: [10.1103/PhysRevD.71.023525](https://doi.org/10.1103/PhysRevD.71.023525). eprint: [astro-ph/0408081](https://arxiv.org/abs/astro-ph/0408081).
- [106] Damien A. Easson and Alexander Vikman. "The Phantom of the New Oscillatory Cosmological Phase." In: (2016). arXiv: [1607.00996](https://arxiv.org/abs/1607.00996) [gr-qc].
- [107] Cedric Deffayet, Oriol Pujolas, Ignacy Sawicki, and Alexander Vikman. "Imperfect Dark Energy from Kinetic Gravity Braiding." In: *JCAP* 1010 (2010), p. 026. DOI: [10.1088/1475-7516/2010/10/026](https://doi.org/10.1088/1475-7516/2010/10/026). arXiv: [1008.0048](https://arxiv.org/abs/1008.0048) [hep-th].
- [108] Wayne Hu. "Crossing the phantom divide: Dark energy internal degrees of freedom." In: *Phys. Rev. D* 71 (2005), p. 047301. DOI: [10.1103/PhysRevD.71.047301](https://doi.org/10.1103/PhysRevD.71.047301). arXiv: [astro-ph/0410680](https://arxiv.org/abs/astro-ph/0410680) [astro-ph].

- [109] Zong-Kuan Guo, Yun-Song Piao, Xin-Min Zhang, and Yuan-Zhong Zhang. “Cosmological evolution of a quintom model of dark energy.” In: *Phys. Lett.* B608 (2005), pp. 177–182. DOI: [10.1016/j.physletb.2005.01.017](https://doi.org/10.1016/j.physletb.2005.01.017). arXiv: [astro-ph/0410654](https://arxiv.org/abs/astro-ph/0410654) [astro-ph].
- [110] N. Frusciante, G. Papadomanolakis, and A. Silvestri. “An extended action for the effective field theory of dark energy: a stability analysis and a complete guide to the mapping at the basis of EFTCAMB.” In: *JCAP* 7, 018 (July 2016), p. 018. DOI: [10.1088/1475-7516/2016/07/018](https://doi.org/10.1088/1475-7516/2016/07/018). arXiv: [1601.04064](https://arxiv.org/abs/1601.04064) [gr-qc].
- [111] J. T. A. de Jong, G. A. Verdoes Kleijn, K. H. Kuijken, and E. A. Valentijn. “The Kilo-Degree Survey.” In: *Experimental Astronomy* 35 (Jan. 2013), pp. 25–44. DOI: [10.1007/s10686-012-9306-1](https://doi.org/10.1007/s10686-012-9306-1). arXiv: [1206.1254](https://arxiv.org/abs/1206.1254).
- [112] Konrad Kuijken et al. “Gravitational Lensing Analysis of the Kilo Degree Survey.” In: *Mon. Not. Roy. Astron. Soc.* 454.4 (2015), pp. 3500–3532. DOI: [10.1093/mnras/stv2140](https://doi.org/10.1093/mnras/stv2140). arXiv: [1507.00738](https://arxiv.org/abs/1507.00738) [astro-ph.CO].
- [113] A. J. Mead, J. A. Peacock, C. Heymans, S. Joudaki, and A. F. Heavens. “An accurate halo model for fitting non-linear cosmological power spectra and baryonic feedback models.” In: *MNRAS* 454 (Dec. 2015), pp. 1958–1975. DOI: [10.1093/mnras/stv2036](https://doi.org/10.1093/mnras/stv2036). arXiv: [1505.07833](https://arxiv.org/abs/1505.07833).
- [114] P. A. R. Ade et al. “Planck 2015 results. XIII. Cosmological parameters.” In: *Astron. Astrophys.* 594 (2016), A13. DOI: [10.1051/0004-6361/201525830](https://doi.org/10.1051/0004-6361/201525830). arXiv: [1502.01589](https://arxiv.org/abs/1502.01589) [astro-ph.CO].
- [115] N. Aghanim et al. “Planck intermediate results. XLVI. Reduction of large-scale systematic effects in HFI polarization maps and estimation of the reionization optical depth.” In: *Astron. Astrophys.* 596 (2016), A107. DOI: [10.1051/0004-6361/201628890](https://doi.org/10.1051/0004-6361/201628890). arXiv: [1605.02985](https://arxiv.org/abs/1605.02985) [astro-ph.CO].

- [116] David J. Spiegelhalter, Nicola G. Best, Bradley P. Carlin, and Angelika van der Linde. "The deviance information criterion: 12 years on." In: *Journal of the Royal Statistical Society: Series B (Statistical Methodology)* 76.3 (2014), pp. 485–493. ISSN: 1467-9868. DOI: [10.1111/rssb.12062](https://doi.org/10.1111/rssb.12062). URL: <http://dx.doi.org/10.1111/rssb.12062>.
- [117] Levon Pogosian and Alessandra Silvestri. "What can Cosmology tell us about Gravity? Constraining Horndeski with Sigma and Mu." In: *Phys. Rev. D* 94.10 (2016), p. 104014. DOI: [10.1103/PhysRevD.94.104014](https://doi.org/10.1103/PhysRevD.94.104014). arXiv: [1606.05339](https://arxiv.org/abs/1606.05339) [[astro-ph.CO](https://arxiv.org/abs/1606.05339)].
- [118] Alessandra Silvestri and Mark Trodden. "Approaches to Understanding Cosmic Acceleration." In: *Rept. Prog. Phys.* 72 (2009), p. 096901. DOI: [10.1088/0034-4885/72/9/096901](https://doi.org/10.1088/0034-4885/72/9/096901). arXiv: [0904.0024](https://arxiv.org/abs/0904.0024) [[astro-ph.CO](https://arxiv.org/abs/0904.0024)].
- [119] Luca Amendola, Martin Kunz, and Domenico Sapone. "Measuring the dark side (with weak lensing)." In: *JCAP* 0804 (2008), p. 013. DOI: [10.1088/1475-7516/2008/04/013](https://doi.org/10.1088/1475-7516/2008/04/013). arXiv: [0704.2421](https://arxiv.org/abs/0704.2421) [[astro-ph](https://arxiv.org/abs/0704.2421)].
- [120] Edmund Bertschinger and Phillip Zukin. "Distinguishing Modified Gravity from Dark Energy." In: *Phys. Rev. D* 78 (2008), p. 024015. DOI: [10.1103/PhysRevD.78.024015](https://doi.org/10.1103/PhysRevD.78.024015). arXiv: [0801.2431](https://arxiv.org/abs/0801.2431) [[astro-ph](https://arxiv.org/abs/0801.2431)].
- [121] Levon Pogosian, Alessandra Silvestri, Kazuya Koyama, and Gong-Bo Zhao. "How to optimally parametrize deviations from General Relativity in the evolution of cosmological perturbations?" In: *Phys. Rev. D* 81 (2010), p. 104023. DOI: [10.1103/PhysRevD.81.104023](https://doi.org/10.1103/PhysRevD.81.104023). arXiv: [1002.2382](https://arxiv.org/abs/1002.2382) [[astro-ph.CO](https://arxiv.org/abs/1002.2382)].
- [122] Robert G. Crittenden, Levon Pogosian, and Gong-Bo Zhao. "Investigating dark energy experiments with principal components." In: *JCAP* 0912 (2009), p. 025. DOI: [10.1088/1475-7516/2009/12/025](https://doi.org/10.1088/1475-7516/2009/12/025). arXiv: [astro-ph/0510293](https://arxiv.org/abs/astro-ph/0510293) [[astro-ph](https://arxiv.org/abs/astro-ph/0510293)].

- [123] Gong-Bo Zhao, Levon Pogossian, Alessandra Silvestri, and Joel Zylberberg. "Cosmological Tests of General Relativity with Future Tomographic Surveys." In: *Phys. Rev. Lett.* 103 (2009), p. 241301. DOI: [10.1103/PhysRevLett.103.241301](https://doi.org/10.1103/PhysRevLett.103.241301). arXiv: [0905.1326](https://arxiv.org/abs/0905.1326) [[astro-ph.CO](https://arxiv.org/abs/0905.1326)].
- [124] Alireza Hojjati, Gong-Bo Zhao, Levon Pogossian, Alessandra Silvestri, Robert Crittenden, and Kazuya Koyama. "Cosmological tests of General Relativity: a principal component analysis." In: *Phys. Rev. D* 85 (2012), p. 043508. DOI: [10.1103/PhysRevD.85.043508](https://doi.org/10.1103/PhysRevD.85.043508). arXiv: [1111.3960](https://arxiv.org/abs/1111.3960) [[astro-ph.CO](https://arxiv.org/abs/1111.3960)].
- [125] Shinsuke Asaba, Chiaki Hikage, Kazuya Koyama, Gong-Bo Zhao, Alireza Hojjati, and Levon Pogossian. "Principal Component Analysis of Modified Gravity using Weak Lensing and Peculiar Velocity Measurements." In: *JCAP* 1308 (2013), p. 029. DOI: [10.1088/1475-7516/2013/08/029](https://doi.org/10.1088/1475-7516/2013/08/029). arXiv: [1306.2546](https://arxiv.org/abs/1306.2546) [[astro-ph.CO](https://arxiv.org/abs/1306.2546)].
- [126] Robert G. Crittenden, Gong-Bo Zhao, Levon Pogossian, Lado Samushia, and Xinmin Zhang. "Fables of reconstruction: controlling bias in the dark energy equation of state." In: *JCAP* 1202 (2012), p. 048. DOI: [10.1088/1475-7516/2012/02/048](https://doi.org/10.1088/1475-7516/2012/02/048). arXiv: [1112.1693](https://arxiv.org/abs/1112.1693) [[astro-ph.CO](https://arxiv.org/abs/1112.1693)].
- [127] Gong-Bo Zhao, Robert G. Crittenden, Levon Pogossian, and Xinmin Zhang. "Examining the evidence for dynamical dark energy." In: *Phys. Rev. Lett.* 109 (2012), p. 171301. DOI: [10.1103/PhysRevLett.109.171301](https://doi.org/10.1103/PhysRevLett.109.171301). arXiv: [1207.3804](https://arxiv.org/abs/1207.3804) [[astro-ph.CO](https://arxiv.org/abs/1207.3804)].
- [128] Marco Raveri, Philip Bull, Alessandra Silvestri, and Levon Pogossian. "Priors on the effective Dark Energy equation of state in scalar-tensor theories." In: *Phys. Rev. D* 96.8 (2017), p. 083509. DOI: [10.1103/PhysRevD.96.083509](https://doi.org/10.1103/PhysRevD.96.083509). arXiv: [1703.05297](https://arxiv.org/abs/1703.05297) [[astro-ph.CO](https://arxiv.org/abs/1703.05297)].

- [129] Gong-Bo Zhao et al. “Dynamical dark energy in light of the latest observations.” In: *Nat. Astron.* 1 (2017), pp. 627–632. DOI: [10.1038/s41550-017-0216-z](https://doi.org/10.1038/s41550-017-0216-z). arXiv: [1701.08165](https://arxiv.org/abs/1701.08165) [[astro-ph.CO](#)].
- [130] Yuting Wang, Levon Pogosian, Gong-Bo Zhao, and Alex Zucca. “Evolution of dark energy reconstructed from the latest observations.” In: (2018). arXiv: [1807.03772](https://arxiv.org/abs/1807.03772) [[astro-ph.CO](#)].
- [131] Santiago Casas, Martin Kunz, Matteo Martinelli, and Valeria Pettorino. “Linear and non-linear Modified Gravity forecasts with future surveys.” In: *Phys. Dark Univ.* 18 (2017), pp. 73–104. DOI: [10.1016/j.dark.2017.09.009](https://doi.org/10.1016/j.dark.2017.09.009). arXiv: [1703.01271](https://arxiv.org/abs/1703.01271) [[astro-ph.CO](#)].
- [132] Pengjie Zhang, Michele Liguori, Rachel Bean, and Scott Dodelson. “Probing Gravity at Cosmological Scales by Measurements which Test the Relationship between Gravitational Lensing and Matter Overdensity.” In: *Phys. Rev. Lett.* 99 (2007), p. 141302. DOI: [10.1103/PhysRevLett.99.141302](https://doi.org/10.1103/PhysRevLett.99.141302). arXiv: [0704.1932](https://arxiv.org/abs/0704.1932) [[astro-ph](#)].
- [133] <http://www.euclid-ec.org>.
- [134] <http://www.lsst.org>.
- [135] Bhuvnesh Jain and Pengjie Zhang. “Observational Tests of Modified Gravity.” In: *Phys. Rev. D* 78 (2008), p. 063503. DOI: [10.1103/PhysRevD.78.063503](https://doi.org/10.1103/PhysRevD.78.063503). arXiv: [0709.2375](https://arxiv.org/abs/0709.2375) [[astro-ph](#)].
- [136] Scott F. Daniel, Robert R. Caldwell, Asantha Cooray, and Alessandro Melchiorri. “Large Scale Structure as a Probe of Gravitational Slip.” In: *Phys. Rev. D* 77 (2008), p. 103513. DOI: [10.1103/PhysRevD.77.103513](https://doi.org/10.1103/PhysRevD.77.103513). arXiv: [0802.1068](https://arxiv.org/abs/0802.1068) [[astro-ph](#)].
- [137] Yong-Seon Song, Gong-Bo Zhao, David Bacon, Kazuya Koyama, Robert C. Nichol, and Levon Pogosian. “Complementarity of Weak Lensing and Peculiar Velocity Measurements in Testing

- General Relativity." In: *Phys. Rev. D* 84 (2011), p. 083523. DOI: [10.1103/PhysRevD.84.083523](https://doi.org/10.1103/PhysRevD.84.083523). arXiv: [1011.2106](https://arxiv.org/abs/1011.2106) [astro-ph.CO].
- [138] Fergus Simpson et al. "CFHTLenS: Testing the Laws of Gravity with Tomographic Weak Lensing and Redshift Space Distortions." In: *Mon. Not. Roy. Astron. Soc.* 429 (2013), p. 2249. DOI: [10.1093/mnras/sts493](https://doi.org/10.1093/mnras/sts493). arXiv: [1212.3339](https://arxiv.org/abs/1212.3339) [astro-ph.CO].
- [139] Gong-Bo Zhao, Levon Pogosian, Alessandra Silvestri, and Joel Zylberberg. "Searching for modified growth patterns with tomographic surveys." In: *Phys. Rev. D* 79 (2009), p. 083513. DOI: [10.1103/PhysRevD.79.083513](https://doi.org/10.1103/PhysRevD.79.083513). arXiv: [0809.3791](https://arxiv.org/abs/0809.3791) [astro-ph].
- [140] Alireza Hojjati, Levon Pogosian, and Gong-Bo Zhao. "Testing gravity with CAMB and CosmoMC." In: *JCAP* 1108 (2011), p. 005. DOI: [10.1088/1475-7516/2011/08/005](https://doi.org/10.1088/1475-7516/2011/08/005). arXiv: [1106.4543](https://arxiv.org/abs/1106.4543) [astro-ph.CO].
- [141] C. Deffayet, Gilles Esposito-Farese, and A. Vikman. "Covariant Galileon." In: *Phys. Rev. D* 79 (2009), p. 084003. DOI: [10.1103/PhysRevD.79.084003](https://doi.org/10.1103/PhysRevD.79.084003). arXiv: [0901.1314](https://arxiv.org/abs/0901.1314) [hep-th].
- [142] Philippe Brax, Anne-Christine Davis, Baojiu Li, and Hans A. Winther. "A Unified Description of Screened Modified Gravity." In: *Phys. Rev. D* 86 (2012), p. 044015. DOI: [10.1103/PhysRevD.86.044015](https://doi.org/10.1103/PhysRevD.86.044015). arXiv: [1203.4812](https://arxiv.org/abs/1203.4812) [astro-ph.CO].
- [143] Alexandre Barreira, Baojiu Li, Carlton M. Baugh, and Silvia Pascoli. "Linear perturbations in Galileon gravity models." In: *Phys. Rev. D* 86 (2012), p. 124016. DOI: [10.1103/PhysRevD.86.124016](https://doi.org/10.1103/PhysRevD.86.124016). arXiv: [1208.0600](https://arxiv.org/abs/1208.0600) [astro-ph.CO].
- [144] Antonio De Felice, Tsutomu Kobayashi, and Shinji Tsujikawa. "Effective gravitational couplings for cosmological perturbations in the most general scalar-tensor theories with second-order field equations." In: *Phys. Lett. B* 706 (2011), pp. 123–133. DOI: [10.1016/j.physletb.2011.11.028](https://doi.org/10.1016/j.physletb.2011.11.028). arXiv: [1108.4242](https://arxiv.org/abs/1108.4242) [gr-qc].

- [145] Alessandra Silvestri, Levon Pogosian, and Roman V. Buniy. “Practical approach to cosmological perturbations in modified gravity.” In: *Phys. Rev. D* 87.10 (2013), p. 104015. DOI: [10.1103/PhysRevD.87.104015](https://doi.org/10.1103/PhysRevD.87.104015). arXiv: [1302.1193](https://arxiv.org/abs/1302.1193) [astro-ph.CO].
- [146] C. D. Kreisch and E. Komatsu. “Cosmological Constraints on Horndeski Gravity in Light of GW170817.” In: (2017). arXiv: [1712.02710](https://arxiv.org/abs/1712.02710) [astro-ph.CO].
- [147] Jean-Philippe Uzan. “Varying Constants, Gravitation and Cosmology.” In: *Living Rev. Rel.* 14 (2011), p. 2. DOI: [10.12942/lrr-2011-2](https://doi.org/10.12942/lrr-2011-2). arXiv: [1009.5514](https://arxiv.org/abs/1009.5514) [astro-ph.CO].
- [148] Salvatore Capozziello, Sante Carloni, and Antonio Troisi. “Quintessence without scalar fields.” In: *Recent Res. Dev. Astron. Astrophys.* 1 (2003), p. 625. arXiv: [astro-ph/0303041](https://arxiv.org/abs/astro-ph/0303041) [astro-ph].
- [149] Sean M. Carroll, Vikram Duvvuri, Mark Trodden, and Michael S. Turner. “Is cosmic speed - up due to new gravitational physics?” In: *Phys. Rev. D* 70 (2004), p. 043528. DOI: [10.1103/PhysRevD.70.043528](https://doi.org/10.1103/PhysRevD.70.043528). arXiv: [astro-ph/0306438](https://arxiv.org/abs/astro-ph/0306438) [astro-ph].
- [150] Stephen A. Appleby and Richard A. Battye. “Do consistent $F(R)$ models mimic General Relativity plus Λ ?” In: *Phys. Lett.* B654 (2007), pp. 7–12. DOI: [10.1016/j.physletb.2007.08.037](https://doi.org/10.1016/j.physletb.2007.08.037). arXiv: [0705.3199](https://arxiv.org/abs/0705.3199) [astro-ph].
- [151] Wayne Hu and Ignacy Sawicki. “Models of $f(R)$ Cosmic Acceleration that Evade Solar-System Tests.” In: *Phys. Rev. D* 76 (2007), p. 064004. DOI: [10.1103/PhysRevD.76.064004](https://doi.org/10.1103/PhysRevD.76.064004). arXiv: [0705.1158](https://arxiv.org/abs/0705.1158) [astro-ph].
- [152] Alexei A. Starobinsky. “Disappearing cosmological constant in $f(R)$ gravity.” In: *JETP Lett.* 86 (2007), pp. 157–163. DOI: [10.1134/S0021364007150027](https://doi.org/10.1134/S0021364007150027). arXiv: [0706.2041](https://arxiv.org/abs/0706.2041) [astro-ph].

- [153] Justin Khoury and Amanda Weltman. "Chameleon fields: Awaiting surprises for tests of gravity in space." In: *Phys. Rev. Lett.* 93 (2004), p. 171104. DOI: [10.1103/PhysRevLett.93.171104](https://doi.org/10.1103/PhysRevLett.93.171104). arXiv: [astro-ph/0309300](https://arxiv.org/abs/astro-ph/0309300) [astro-ph].
- [154] Kurt Hinterbichler and Justin Khoury. "Symmetron Fields: Screening Long-Range Forces Through Local Symmetry Restoration." In: *Phys. Rev. Lett.* 104 (2010), p. 231301. DOI: [10.1103/PhysRevLett.104.231301](https://doi.org/10.1103/PhysRevLett.104.231301). arXiv: [1001.4525](https://arxiv.org/abs/1001.4525) [hep-th].
- [155] T. Damour and Alexander M. Polyakov. "The String dilaton and a least coupling principle." In: *Nucl. Phys.* B423 (1994), pp. 532–558. DOI: [10.1016/0550-3213\(94\)90143-0](https://doi.org/10.1016/0550-3213(94)90143-0). arXiv: [hep-th/9401069](https://arxiv.org/abs/hep-th/9401069) [hep-th].
- [156] Philippe Brax, Carsten van de Bruck, Anne-Christine Davis, Baojiu Li, and Douglas J. Shaw. "Nonlinear Structure Formation with the Environmentally Dependent Dilaton." In: *Phys. Rev.* D83 (2011), p. 104026. DOI: [10.1103/PhysRevD.83.104026](https://doi.org/10.1103/PhysRevD.83.104026). arXiv: [1102.3692](https://arxiv.org/abs/1102.3692) [astro-ph.CO].
- [157] C. M. Caves. "Gravitational radiation and the ultimate speed in Rosen's bimetric theory of gravity." In: *Annals Phys.* 125 (1980), pp. 35–52. DOI: [10.1016/0003-4916\(80\)90117-7](https://doi.org/10.1016/0003-4916(80)90117-7).
- [158] Guy D. Moore and Ann E. Nelson. "Lower bound on the propagation speed of gravity from gravitational Cherenkov radiation." In: *JHEP* 09 (2001), p. 023. DOI: [10.1088/1126-6708/2001/09/023](https://doi.org/10.1088/1126-6708/2001/09/023). arXiv: [hep-ph/0106220](https://arxiv.org/abs/hep-ph/0106220) [hep-ph].
- [159] Jose Beltran Jimenez, Federico Piazza, and Hermano Velten. "Evading the Vainshtein Mechanism with Anomalous Gravitational Wave Speed: Constraints on Modified Gravity from Binary Pulsars." In: *Phys. Rev. Lett.* 116.6 (2016), p. 061101. DOI: [10.1103/PhysRevLett.116.061101](https://doi.org/10.1103/PhysRevLett.116.061101). arXiv: [1507.05047](https://arxiv.org/abs/1507.05047) [gr-qc].

- [160] Bin Hu, Marco Raveri, Noemi Frusciante, and Alessandra Silvestri. “EFTCAMB/EFTCosmoMC: Numerical Notes v2.0.” In: (2014). arXiv: [1405.3590 \[astro-ph.IM\]](#).
- [161] Louis Perenon, Federico Piazza, Christian Marinoni, and Lam Hui. “Phenomenology of dark energy: general features of large-scale perturbations.” In: *JCAP* 1511.11 (2015), p. 029. DOI: [10.1088/1475-7516/2015/11/029](#). arXiv: [1506.03047 \[astro-ph.CO\]](#).
- [162] C. Brans and R. H. Dicke. “Mach’s principle and a relativistic theory of gravitation.” In: *Phys. Rev.* 124 (1961), pp. 925–935. DOI: [10.1103/PhysRev.124.925](#).
- [163] Diego Blas, Mikhail M. Ivanov, Ignacy Sawicki, and Sergey Sibiryakov. “On constraining the speed of gravitational waves following GW150914.” In: (2016). arXiv: [1602.04188 \[gr-qc\]](#).
- [164] B. P. Abbott et al. “Observation of Gravitational Waves from a Binary Black Hole Merger.” In: *Phys. Rev. Lett.* 116.6 (2016), p. 061102. DOI: [10.1103/PhysRevLett.116.061102](#). arXiv: [1602.03837 \[gr-qc\]](#).
- [165] Louis Perenon, Christian Marinoni, and Federico Piazza. “Diagnostic of Horndeski Theories.” In: *JCAP* 1701.01 (2017), p. 035. DOI: [10.1088/1475-7516/2017/01/035](#). arXiv: [1609.09197 \[astro-ph.CO\]](#).
- [166] Chunshan Lin, Shinji Mukohyama, Ryo Namba, and Rio Saitou. “Hamiltonian structure of scalar-tensor theories beyond Horndeski.” In: *JCAP* 1410.10 (2014), p. 071. DOI: [10.1088/1475-7516/2014/10/071](#). arXiv: [1408.0670 \[hep-th\]](#).
- [167] László Á. Gergely and Shinji Tsujikawa. “Effective field theory of modified gravity with two scalar fields: dark energy and dark matter.” In: *Phys. Rev. D* 89.6 (2014), p. 064059. DOI: [10.1103/PhysRevD.89.064059](#). arXiv: [1402.0553 \[hep-th\]](#).

- [168] Ryotaro Kase and Shinji Tsujikawa. "Cosmology in generalized Horndeski theories with second-order equations of motion." In: *Phys. Rev. D*90 (2014), p. 044073. DOI: [10.1103/PhysRevD.90.044073](https://doi.org/10.1103/PhysRevD.90.044073). arXiv: [1407.0794](https://arxiv.org/abs/1407.0794) [hep-th].
- [169] Antonio De Felice, Kazuya Koyama, and Shinji Tsujikawa. "Observational signatures of the theories beyond Horndeski." In: *JCAP* 1505.05 (2015), p. 058. DOI: [10.1088/1475-7516/2015/05/058](https://doi.org/10.1088/1475-7516/2015/05/058). arXiv: [1503.06539](https://arxiv.org/abs/1503.06539) [gr-qc].
- [170] Tsutomu Kobayashi, Yuki Watanabe, and Daisuke Yamauchi. "Breaking of Vainshtein screening in scalar-tensor theories beyond Horndeski." In: *Phys. Rev. D*91.6 (2015), p. 064013. DOI: [10.1103/PhysRevD.91.064013](https://doi.org/10.1103/PhysRevD.91.064013). arXiv: [1411.4130](https://arxiv.org/abs/1411.4130) [gr-qc].
- [171] Kazuya Koyama and Jeremy Sakstein. "Astrophysical Probes of the Vainshtein Mechanism: Stars and Galaxies." In: *Phys. Rev. D*91 (2015), p. 124066. DOI: [10.1103/PhysRevD.91.124066](https://doi.org/10.1103/PhysRevD.91.124066). arXiv: [1502.06872](https://arxiv.org/abs/1502.06872) [astro-ph.CO].
- [172] Jeremy Sakstein. "Hydrogen Burning in Low Mass Stars Constrains Scalar-Tensor Theories of Gravity." In: *Phys. Rev. Lett.* 115 (2015), p. 201101. DOI: [10.1103/PhysRevLett.115.201101](https://doi.org/10.1103/PhysRevLett.115.201101). arXiv: [1510.05964](https://arxiv.org/abs/1510.05964) [astro-ph.CO].
- [173] Jeremy Sakstein. "Testing Gravity Using Dwarf Stars." In: *Phys. Rev. D*92 (2015), p. 124045. DOI: [10.1103/PhysRevD.92.124045](https://doi.org/10.1103/PhysRevD.92.124045). arXiv: [1511.01685](https://arxiv.org/abs/1511.01685) [astro-ph.CO].
- [174] Jeremy Sakstein, Harry Wilcox, David Bacon, Kazuya Koyama, and Robert C. Nichol. "Testing Gravity Using Galaxy Clusters: New Constraints on Beyond Horndeski Theories." In: *JCAP* 1607.07 (2016), p. 019. DOI: [10.1088/1475-7516/2016/07/019](https://doi.org/10.1088/1475-7516/2016/07/019). arXiv: [1603.06368](https://arxiv.org/abs/1603.06368) [astro-ph.CO].

- [175] Eugeny Babichev, Kazuya Koyama, David Langlois, Ryo Saito, and Jeremy Sakstein. "Relativistic Stars in Beyond Horndeski Theories." In: *Class. Quant. Grav.* 33.23 (2016), p. 235014. DOI: [10.1088/0264-9381/33/23/235014](https://doi.org/10.1088/0264-9381/33/23/235014). arXiv: [1606.06627](https://arxiv.org/abs/1606.06627) [gr-qc].
- [176] Antonio De Felice, Ryotaro Kase, and Shinji Tsujikawa. "Existence and disappearance of conical singularities in Gleyzes-Langlois-Piazza-Vernizzi theories." In: *Phys. Rev. D* 92.12 (2015), p. 124060. DOI: [10.1103/PhysRevD.92.124060](https://doi.org/10.1103/PhysRevD.92.124060). arXiv: [1508.06364](https://arxiv.org/abs/1508.06364) [gr-qc].
- [177] Ryotaro Kase, Shinji Tsujikawa, and Antonio De Felice. "Conical singularities and the Vainshtein screening in full GLPV theories." In: *JCAP* 1603.03 (2016), p. 003. DOI: [10.1088/1475-7516/2016/03/003](https://doi.org/10.1088/1475-7516/2016/03/003). arXiv: [1512.06497](https://arxiv.org/abs/1512.06497) [gr-qc].
- [178] Xian Gao. "Hamiltonian analysis of spatially covariant gravity." In: *Phys. Rev. D* 90 (2014), p. 104033. DOI: [10.1103/PhysRevD.90.104033](https://doi.org/10.1103/PhysRevD.90.104033). arXiv: [1409.6708](https://arxiv.org/abs/1409.6708) [gr-qc].
- [179] Ryotaro Kase and Shinji Tsujikawa. "Effective field theory approach to modified gravity including Horndeski theory and Horava-Lifshitz gravity." In: *Int. J. Mod. Phys. D* 23.13 (2015), p. 1443008. DOI: [10.1142/S0218271814430081](https://doi.org/10.1142/S0218271814430081). arXiv: [1409.1984](https://arxiv.org/abs/1409.1984) [hep-th].
- [180] Noemi Frusciante, Marco Raveri, Daniele Vernieri, Bin Hu, and Alessandra Silvestri. "Horava Gravity in the Effective Field Theory formalism: From cosmology to observational constraints." In: *Phys. Dark Univ.* 13 (2016), pp. 7–24. DOI: [10.1016/j.dark.2016.03.002](https://doi.org/10.1016/j.dark.2016.03.002). arXiv: [1508.01787](https://arxiv.org/abs/1508.01787) [astro-ph.CO].
- [181] Petr Horava. "Quantum Gravity at a Lifshitz Point." In: *Phys. Rev. D* 79 (2009), p. 084008. DOI: [10.1103/PhysRevD.79.084008](https://doi.org/10.1103/PhysRevD.79.084008). arXiv: [0901.3775](https://arxiv.org/abs/0901.3775) [hep-th].

- [182] Marco Crisostomi, Kazuya Koyama, and Gianmassimo Tasinato. “Extended Scalar-Tensor Theories of Gravity.” In: *JCAP* 1604.04 (2016), p. 044. DOI: [10.1088/1475-7516/2016/04/044](https://doi.org/10.1088/1475-7516/2016/04/044). arXiv: [1602.03119](https://arxiv.org/abs/1602.03119) [hep-th].
- [183] Hayato Motohashi, Karim Noui, Teruaki Suyama, Masahide Yamaguchi, and David Langlois. “Healthy degenerate theories with higher derivatives.” In: *JCAP* 1607.07 (2016), p. 033. DOI: [10.1088/1475-7516/2016/07/033](https://doi.org/10.1088/1475-7516/2016/07/033). arXiv: [1603.09355](https://arxiv.org/abs/1603.09355) [hep-th].
- [184] A. Goldstein et al. “An Ordinary Short Gamma-Ray Burst with Extraordinary Implications: Fermi-GBM Detection of GRB 170817A.” In: *Astrophys. J.* 848.2 (2017), p. L14. DOI: [10.3847/2041-8213/aa8f41](https://doi.org/10.3847/2041-8213/aa8f41). arXiv: [1710.05446](https://arxiv.org/abs/1710.05446) [astro-ph.HE].
- [185] Richard A. Battye, Francesco Pace, and Damien Trinh. “Gravitational wave constraints on dark sector models.” In: *Phys. Rev. D* 98.2 (2018), p. 023504. DOI: [10.1103/PhysRevD.98.023504](https://doi.org/10.1103/PhysRevD.98.023504). arXiv: [1802.09447](https://arxiv.org/abs/1802.09447) [astro-ph.CO].
- [186] Luca Amendola, Dario Bettoni, Guillem Domenech, and Adalto R. Gomes. “Doppelganger dark energy: modified gravity with non-universal couplings after GW170817.” In: *JCAP* 1806.06 (2018), p. 029. DOI: [10.1088/1475-7516/2018/06/029](https://doi.org/10.1088/1475-7516/2018/06/029). arXiv: [1803.06368](https://arxiv.org/abs/1803.06368) [gr-qc].
- [187] Edmund J. Copeland, Michael Kopp, Antonio Padilla, Paul M. Saffin, and Constantinos Skordis. “Dark energy after GW170817 revisited.” In: *Phys. Rev. Lett.* 122.6 (2019), p. 061301. DOI: [10.1103/PhysRevLett.122.061301](https://doi.org/10.1103/PhysRevLett.122.061301). arXiv: [1810.08239](https://arxiv.org/abs/1810.08239) [gr-qc].
- [188] Ryotaro Kase and Shinji Tsujikawa. “A dark energy scenario consistent with GW170817 in theories beyond Horndeski.” In: (2018). arXiv: [1802.02728](https://arxiv.org/abs/1802.02728) [gr-qc].
- [189] Paolo Creminelli, Matthew Lewandowski, Giovanni Tambalo, and Filippo Vernizzi. “Gravitational Wave Decay into Dark Energy.” In: (2018). arXiv: [1809.03484](https://arxiv.org/abs/1809.03484) [astro-ph.CO].

- [190] Noemi Frusciante, Ryotaro Kase, Kazuya Koyama, Shinji Tsujikawa, and Daniele Vernieri. “Tracker and scaling solutions in DHOST theories.” In: *Phys. Lett.* B790 (2019), pp. 167–175. DOI: [10.1016/j.physletb.2019.01.009](https://doi.org/10.1016/j.physletb.2019.01.009). arXiv: [1812.05204](https://arxiv.org/abs/1812.05204) [gr-qc].
- [191] Tsutomu Kobayashi. “Horndeski theory and beyond: a review.” In: *Rept. Prog. Phys.* 82.8 (2019), p. 086901. DOI: [10.1088/1361-6633/ab2429](https://doi.org/10.1088/1361-6633/ab2429). arXiv: [1901.07183](https://arxiv.org/abs/1901.07183) [gr-qc].
- [192] Heather Audley et al. “Laser Interferometer Space Antenna.” In: (2017). arXiv: [1702.00786](https://arxiv.org/abs/1702.00786) [astro-ph.IM].
- [193] Rajeev Kumar Jain, Chris Kouvaris, and Niklas Gmrlund Nielsen. “White Dwarf Critical Tests for Modified Gravity.” In: *Phys. Rev. Lett.* 116.15 (2016), p. 151103. DOI: [10.1103/PhysRevLett.116.151103](https://doi.org/10.1103/PhysRevLett.116.151103). arXiv: [1512.05946](https://arxiv.org/abs/1512.05946) [astro-ph.CO].
- [194] Ippocratis D. Saltas, Ignacy Sawicki, and Ilidio Lopes. “White dwarfs and revelations.” In: *JCAP* 1805.05 (2018), p. 028. DOI: [10.1088/1475-7516/2018/05/028](https://doi.org/10.1088/1475-7516/2018/05/028). arXiv: [1803.00541](https://arxiv.org/abs/1803.00541) [astro-ph.CO].
- [195] Alexandru Dima and Filippo Vernizzi. “Vainshtein Screening in Scalar-Tensor Theories before and after GW170817: Constraints on Theories beyond Horndeski.” In: *Phys. Rev. D* 97.10 (2018), p. 101302. DOI: [10.1103/PhysRevD.97.101302](https://doi.org/10.1103/PhysRevD.97.101302). arXiv: [1712.04731](https://arxiv.org/abs/1712.04731) [gr-qc].
- [196] Dina Traykova, Emilio Bellini, and Pedro G. Ferreira. “The phenomenology of beyond Horndeski gravity.” In: *JCAP* 1908 (2019), p. 035. DOI: [10.1088/1475-7516/2019/08/035](https://doi.org/10.1088/1475-7516/2019/08/035). arXiv: [1902.10687](https://arxiv.org/abs/1902.10687) [astro-ph.CO].
- [197] Nima Arkani-Hamed, Hsin-Chia Cheng, Markus A. Luty, and Shinji Mukohyama. “Ghost condensation and a consistent infrared modification of gravity.” In: *JHEP* 05 (2004), p. 074. DOI: [10.1088/1126-6708/2004/05/074](https://doi.org/10.1088/1126-6708/2004/05/074). arXiv: [hep-th/0312099](https://arxiv.org/abs/hep-th/0312099) [hep-th].

- [198] Nicola Bartolo, Emilio Bellini, Daniele Bertacca, and Sabino Matarrese. "Matter bispectrum in cubic Galileon cosmologies." In: *JCAP* 1303 (2013), p. 034. DOI: [10.1088/1475-7516/2013/03/034](https://doi.org/10.1088/1475-7516/2013/03/034). arXiv: [1301.4831](https://arxiv.org/abs/1301.4831) [[astro-ph.CO](#)].
- [199] Richard L. Arnowitt, Stanley Deser, and Charles W. Misner. "The Dynamics of general relativity." In: *Gen. Rel. Grav.* 40 (2008), pp. 1997–2027. DOI: [10.1007/s10714-008-0661-1](https://doi.org/10.1007/s10714-008-0661-1). arXiv: [gr-qc/0405109](https://arxiv.org/abs/gr-qc/0405109) [[gr-qc](#)].
- [200] Noemi Frusciante, Georgios Papadomanolakis, and Alessandra Silvestri. "An Extended action for the effective field theory of dark energy: a stability analysis and a complete guide to the mapping at the basis of EFTCAMB." In: (2016). arXiv: [1601.04064](https://arxiv.org/abs/1601.04064) [[gr-qc](#)].
- [201] Noemi Frusciante, Simone Peirone, Santiago Casas, and Nelson A. Lima. "The road ahead of Horndeski: cosmology of surviving scalar-tensor theories." In: (2018). arXiv: [1810.10521](https://arxiv.org/abs/1810.10521) [[astro-ph.CO](#)].
- [202] B. Boisseau, Gilles Esposito-Farese, D. Polarski, and Alexei A. Starobinsky. "Reconstruction of a scalar tensor theory of gravity in an accelerating universe." In: *Phys. Rev. Lett.* 85 (2000), p. 2236. DOI: [10.1103/PhysRevLett.85.2236](https://doi.org/10.1103/PhysRevLett.85.2236). arXiv: [gr-qc/0001066](https://arxiv.org/abs/gr-qc/0001066) [[gr-qc](#)].
- [203] Shinji Tsujikawa. "Matter density perturbations and effective gravitational constant in modified gravity models of dark energy." In: *Phys. Rev. D* 76 (2007), p. 023514. DOI: [10.1103/PhysRevD.76.023514](https://doi.org/10.1103/PhysRevD.76.023514). arXiv: [0705.1032](https://arxiv.org/abs/0705.1032) [[astro-ph](#)].
- [204] Ryotaro Kase and Shinji Tsujikawa. "Dark energy in Horndeski theories after GW170817: A review." In: (2018). arXiv: [1809.08735](https://arxiv.org/abs/1809.08735) [[gr-qc](#)].

- [205] Shinji Tsujikawa. “Possibility of realizing weak gravity in redshift space distortion measurements.” In: *Phys. Rev. D* 92.4 (2015), p. 044029. DOI: [10.1103/PhysRevD.92.044029](https://doi.org/10.1103/PhysRevD.92.044029). arXiv: [1505.02459](https://arxiv.org/abs/1505.02459) [[astro-ph.CO](https://arxiv.org/abs/1505.02459)].
- [206] Antony Lewis and Anthony Challinor. “Weak gravitational lensing of the CMB.” In: *Phys. Rept.* 429 (2006), pp. 1–65. DOI: [10.1016/j.physrep.2006.03.002](https://doi.org/10.1016/j.physrep.2006.03.002). arXiv: [astro-ph/0601594](https://arxiv.org/abs/astro-ph/0601594) [[astro-ph](https://arxiv.org/abs/astro-ph)].
- [207] Uros Seljak and Matias Zaldarriaga. “A Line of sight integration approach to cosmic microwave background anisotropies.” In: *Astrophys. J.* 469 (1996), pp. 437–444. DOI: [10.1086/177793](https://doi.org/10.1086/177793). arXiv: [astro-ph/9603033](https://arxiv.org/abs/astro-ph/9603033) [[astro-ph](https://arxiv.org/abs/astro-ph)].
- [208] Meng-Xiang Lin, Marco Raveri, and Wayne Hu. “Phenomenology of modified gravity at recombination.” In: *PRD* 99, 043514 (2019), p. 043514. DOI: [10.1103/PhysRevD.99.043514](https://doi.org/10.1103/PhysRevD.99.043514). arXiv: [1810.02333](https://arxiv.org/abs/1810.02333) [[astro-ph.CO](https://arxiv.org/abs/1810.02333)].
- [209] Giampaolo Benevento, Marco Raveri, Andrei Lazanu, Nicola Bartolo, Michele Liguori, Philippe Brax, and Patrick Valageas. “K-mouflage imprints on cosmological observables and data constraints.” In: *Journal of Cosmology and Astroparticle Physics* 2019.05 (2019), pp. 027–027. DOI: [10.1088/1475-7516/2019/05/027](https://doi.org/10.1088/1475-7516/2019/05/027). URL: <https://doi.org/10.1088/1475-7516/2019/05/027>.
- [210] Wayne Hu and Naoshi Sugiyama. “Anisotropies in the cosmic microwave background: An Analytic approach.” In: *Astrophys. J.* 444 (1995), pp. 489–506. DOI: [10.1086/175624](https://doi.org/10.1086/175624). arXiv: [astro-ph/9407093](https://arxiv.org/abs/astro-ph/9407093) [[astro-ph](https://arxiv.org/abs/astro-ph)].
- [211] F. Beutler, C. Blake, M. Colless, D. H. Jones, L. Staveley-Smith, L. Campbell, Q. Parker, W. Saunders, and F. Watson. “The 6dF Galaxy Survey: baryon acoustic oscillations and the local

- Hubble constant." In: *mnras* 416 (Oct. 2011), pp. 3017–3032. DOI: [10.1111/j.1365-2966.2011.19250.x](https://doi.org/10.1111/j.1365-2966.2011.19250.x). arXiv: [1106.3366](https://arxiv.org/abs/1106.3366).
- [212] A. J. Ross, L. Samushia, C. Howlett, W. J. Percival, A. Burden, and M. Manera. "The clustering of the SDSS DR7 main Galaxy sample - I. A 4 per cent distance measure at $z = 0.15$." In: *mnras* 449 (May 2015), pp. 835–847. DOI: [10.1093/mnras/stv154](https://doi.org/10.1093/mnras/stv154). arXiv: [1409.3242](https://arxiv.org/abs/1409.3242).
- [213] Shadab Alam et al. "The clustering of galaxies in the completed SDSS-III Baryon Oscillation Spectroscopic Survey: cosmological analysis of the DR12 galaxy sample." In: *Mon. Not. Roy. Astron. Soc.* 470.3 (2017), pp. 2617–2652. DOI: [10.1093/mnras/stx721](https://doi.org/10.1093/mnras/stx721). arXiv: [1607.03155](https://arxiv.org/abs/1607.03155) [[astro-ph.CO](https://arxiv.org/abs/1607.03155)].
- [214] M. Betoule et al. "Improved cosmological constraints from a joint analysis of the SDSS-II and SNLS supernova samples." In: *Astron. Astrophys.* 568 (2014), A22. DOI: [10.1051/0004-6361/201423413](https://doi.org/10.1051/0004-6361/201423413). arXiv: [1401.4064](https://arxiv.org/abs/1401.4064) [[astro-ph.CO](https://arxiv.org/abs/1401.4064)].
- [215] Adam G. Riess et al. "New Parallaxes of Galactic Cepheids from Spatially Scanning the Hubble Space Telescope: Implications for the Hubble Constant." In: *Astrophys. J.* 855.2 (2018), p. 136. DOI: [10.3847/1538-4357/aaadb7](https://doi.org/10.3847/1538-4357/aaadb7). arXiv: [1801.01120](https://arxiv.org/abs/1801.01120) [[astro-ph.SR](https://arxiv.org/abs/1801.01120)].
- [216] Jelte T. A. de Jong et al. "The first and second data releases of the Kilo-Degree Survey." In: *Astron. Astrophys.* 582 (2015), A62. DOI: [10.1051/0004-6361/201526601](https://doi.org/10.1051/0004-6361/201526601). arXiv: [1507.00742](https://arxiv.org/abs/1507.00742) [[astro-ph.CO](https://arxiv.org/abs/1507.00742)].
- [217] David J. Spiegelhalter, Nicola G. Best, Bradley P. Carlin, and Angelika van der Linde. "Bayesian measures of model complexity and fit." In: *J. Roy. Statist. Soc.* B64.4 (2002), pp. 583–639. DOI: [10.1111/1467-9868.00353](https://doi.org/10.1111/1467-9868.00353).

- [218] Alan Heavens, Yabebal Fantaye, Arrykrishna Mootoovaloo, Hans Eggers, Zafiirah Hosenie, Steve Kroon, and Elena Sellentin. "Marginal Likelihoods from Monte Carlo Markov Chains." In: (2017). arXiv: [1704.03472 \[stat.CO\]](#).
- [219] Francesco De Bernardis, Thomas D. Kitching, Alan Heavens, and Alessandro Melchiorri. "Determining the Neutrino Mass Hierarchy with Cosmology." In: *Phys. Rev. D* 80 (2009), p. 123509. DOI: [10.1103/PhysRevD.80.123509](#). arXiv: [0907.1917 \[astro-ph.CO\]](#).
- [220] P. A. R. Ade et al. "Planck 2015 results. XV. Gravitational lensing." In: *Astron. Astrophys.* 594 (2016), A15. DOI: [10.1051/0004-6361/201525941](#). arXiv: [1502.01591 \[astro-ph.CO\]](#).