



Universiteit
Leiden
The Netherlands

Aspects of cosmic acceleration

Vardanyan, V.

Citation

Vardanyan, V. (2019, September 18). *Aspects of cosmic acceleration. Casimir PhD Series*. Retrieved from <https://hdl.handle.net/1887/78122>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/78122>

Note: To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/78122> holds various files of this Leiden University dissertation.

Author: Vardanyan, V.

Title: Aspects of cosmic acceleration

Issue Date: 2019-09-18

BIBLIOGRAPHY

- [1] 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. arXiv: astro-ph/9805201 [astro-ph].
- [2] S. Perlmutter et al. “Measurements of Omega and Lambda from 42 high redshift supernovae.” In: *Astrophys. J.* 517 (1999), pp. 565–586. doi: 10.1086/307221. arXiv: astro-ph/9812133 [astro-ph].
- [3] Jerome Martin. “Everything You Always Wanted To Know About The Cosmological Constant Problem (But Were Afraid To Ask).” In: *Comptes Rendus Physique* 13 (2012), pp. 566–665. doi: 10.1016/j.crhy.2012.04.008. arXiv: 1205.3365 [astro-ph.CO].
- [4] A. Friedman. “Über die Krümmung des Raumes.” In: *Zeitschrift für Physik* 10.1 (1922), pp. 377–386. ISSN: 0044-3328. doi: 10.1007/BF01332580. URL: <https://doi.org/10.1007/BF01332580>.
- [5] A. Friedmann. “Über die Möglichkeit einer Welt mit konstanter negativer Krümmung des Raumes.” In: *Zeitschrift für Physik* 21.1 (1924), pp. 326–332. ISSN: 0044-3328. doi: 10.1007/BF01328280. URL: <https://doi.org/10.1007/BF01328280>.
- [6] M. Livio. “Lost in translation: Mystery of the missing text solved.” In: 479 (Nov. 2011), pp. 171–173. doi: 10.1038/479171a.
- [7] Albert Einstein. “The Foundation of the General Theory of Relativity.” In: *Annalen Phys.* 49.7 (1916), pp. 769–822. doi: 10.1002/andp.200590044, 10.1002/andp.19163540702.

- [8] N. Aghanim et al. "Planck 2018 results. VI. Cosmological parameters." In: (2018). arXiv: 1807.06209 [astro-ph.CO].
- [9] L. Amendola and S. Tsujikawa. *Dark Energy: Theory and Observations*. 2010.
- [10] S. Dodelson. *Modern cosmology*. 2003.
- [11] C. Wetterich. "Cosmology and the Fate of Dilatation Symmetry." In: *Nucl. Phys. B* 302 (1988), pp. 668–696. doi: 10.1016/0550-3213(88)90193-9. arXiv: 1711.03844 [hep-th].
- [12] Bharat Ratra and P. J. E. Peebles. "Cosmological consequences of a rolling homogeneous scalar field." In: *Phys. Rev. D* 37 (12 1988), pp. 3406–3427. doi: 10.1103/PhysRevD.37.3406. URL: <https://link.aps.org/doi/10.1103/PhysRevD.37.3406>.
- [13] Georges Obied, Hirosi Ooguri, Lev Spodyneiko, and Cumrun Vafa. "De Sitter Space and the Swampland." In: (2018). arXiv: 1806.08362 [hep-th].
- [14] Andrei D. Linde. "The Inflationary Universe." In: *Rept. Prog. Phys.* 47 (1984), pp. 925–986. doi: 10.1088/0034-4885/47/8/002.
- [15] A. D. Sakharov. "Cosmological Transitions With a Change in Metric Signature." In: *Sov. Phys. JETP* 60 (1984). [Sov. Phys. Usp. 34, 409 (1991)], pp. 214–218.
- [16] Raphael Bousso and Joseph Polchinski. "Quantization of four form fluxes and dynamical neutralization of the cosmological constant." In: *JHEP* 06 (2000), p. 006. doi: 10.1088/1126-6708/2000/06/006. arXiv: hep-th/0004134 [hep-th].
- [17] Shamit Kachru, Renata Kallosh, Andrei D. Linde, and Sandip P. Trivedi. "De Sitter vacua in string theory." In: *Phys. Rev. D* 68 (2003), p. 046005. doi: 10.1103/PhysRevD.68.046005. arXiv: hep-th/0301240 [hep-th].

- [18] Michael R. Douglas. "The Statistics of string / M theory vacua." In: *JHEP* 05 (2003), p. 046. doi: 10.1088/1126-6708/2003/05/046. arXiv: hep-th/0303194 [hep-th].
- [19] Leonard Susskind. "The Anthropic landscape of string theory." In: (2003). arXiv: hep-th/0302219 [hep-th].
- [20] Andrei Linde. "A brief history of the multiverse." In: *Rept. Prog. Phys.* 80.2 (2017), p. 022001. doi: 10.1088/1361-6633/aa50e4. arXiv: 1512.01203 [hep-th].
- [21] Eran Palti. "The Swampland: Introduction and Review." In: 2019. arXiv: 1903.06239 [hep-th].
- [22] Yashar Akrami, Renata Kallosh, Andrei Linde, and Valeri Vardanyan. "The Landscape, the Swampland and the Era of Precision Cosmology." In: *Fortsch. Phys.* 67.1-2 (2019), p. 1800075. doi: 10.1002/prop.201800075. arXiv: 1808.09440 [hep-th].
- [23] Edmund J. Copeland, M. Sami, and Shinji Tsujikawa. "Dynamics of dark energy." In: *Int. J. Mod. Phys. D* 15 (2006), pp. 1753–1936. doi: 10.1142/S021827180600942X. arXiv: hep-th/0603057 [hep-th].
- [24] 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. arXiv: 1407.0059 [astro-ph.CO].
- [25] Sean M. Carroll, Mark Hoffman, and Mark Trodden. "Can the dark energy equation - of - state parameter w be less than -1?" In: *Phys. Rev. D* 68 (2003), p. 023509. doi: 10.1103/PhysRevD.68.023509. arXiv: astro-ph/0301273 [astro-ph].
- [26] James M. Cline, Sangyong Jeon, and Guy D. Moore. "The Phantom menaced: Constraints on low-energy effective ghosts." In: *Phys. Rev. D* 70 (2004), p. 043543. doi: 10.1103/PhysRevD.70.043543. arXiv: hep-ph/0311312 [hep-ph].

- [27] M. Ostrogradsky. In: *Mem. Ac. St. Petersbourg* 6 (1850), p. 385.
- [28] Richard P. Woodard. “Avoiding dark energy with $1/r$ modifications of gravity.” In: *Lect. Notes Phys.* 720 (2007), pp. 403–433. DOI: 10.1007/978-3-540-71013-4_14. arXiv: astro-ph/0601672 [astro-ph].
- [29] 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.
- [30] C. Deffayet, S. Deser, and G. Esposito-Farese. “Generalized Galileons: All scalar models whose curved background extensions maintain second-order field equations and stress-tensors.” In: *Phys. Rev.* D80 (2009), p. 064015. DOI: 10.1103/PhysRevD.80.064015. arXiv: 0906.1967 [gr-qc].
- [31] 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. URL: <https://link.aps.org/doi/10.1103/PhysRev.124.925>.
- [32] 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.* B706 (2011), pp. 123–133. DOI: 10.1016/j.physletb.2011.11.028. arXiv: 1108.4242 [gr-qc].
- [33] 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. arXiv: 1710.05832 [gr-qc].
- [34] 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. arXiv: 1710.05446 [astro-ph.HE].
- [35] Jose María Ezquiaga and Miguel Zumalacárregui. “Dark Energy in light of Multi-Messenger Gravitational-Wave astronomy.” In: *Front. Astron. Space Sci.* 5 (2018), p. 44. DOI: 10.3389/fspas.2018.00044. arXiv: 1807.09241 [astro-ph.CO].
 - [36] M. Fierz and W. Pauli. “On relativistic wave equations for particles of arbitrary spin in an electromagnetic field.” In: *Proc.Roy.Soc.Lond.* A173 (1939), pp. 211–232. DOI: 10.1098/rspa.1939.0140.
 - [37] Claudia de Rham and Gregory Gabadadze. “Generalization of the Fierz-Pauli Action.” In: *Phys.Rev.* D82 (2010), p. 044020. DOI: 10.1103/PhysRevD.82.044020. arXiv: 1007.0443 [hep-th].
 - [38] Claudia de Rham, Gregory Gabadadze, and Andrew J. Tolley. “Resummation of Massive Gravity.” In: *Phys.Rev.Lett.* 106 (2011), p. 231101. DOI: 10.1103/PhysRevLett.106.231101. arXiv: 1011.1232 [hep-th].
 - [39] S.F. Hassan and Rachel A. Rosen. “On Non-Linear Actions for Massive Gravity.” In: *JHEP* 1107 (2011), p. 009. DOI: 10.1007/JHEP07(2011)009. arXiv: 1103.6055 [hep-th].
 - [40] S.F. Hassan and Rachel A. Rosen. “Resolving the Ghost Problem in non-Linear Massive Gravity.” In: *Phys.Rev.Lett.* 108 (2012), p. 041101. DOI: 10.1103/PhysRevLett.108.041101. arXiv: 1106.3344 [hep-th].
 - [41] Claudia de Rham, Gregory Gabadadze, and Andrew J. Tolley. “Ghost free Massive Gravity in the Stückelberg language.” In: *Phys.Lett.* B711 (2012), pp. 190–195. DOI: 10.1016/j.physletb.2012.03.081. arXiv: 1107.3820 [hep-th].
 - [42] Claudia de Rham, Gregory Gabadadze, and Andrew J. Tolley. “Helicity Decomposition of Ghost-free Massive Gravity.” In: *JHEP* 1111 (2011), p. 093. DOI: 10.1007/JHEP11(2011)093. arXiv: 1108.4521 [hep-th].

- [43] S.F. Hassan, Rachel A. Rosen, and Angnis Schmidt-May. “Ghost-free Massive Gravity with a General Reference Metric.” In: *JHEP* **1202** (2012), p. 026. doi: 10.1007/JHEP02(2012)026. arXiv: 1109.3230 [hep-th].
- [44] S.F. Hassan and Rachel A. Rosen. “Confirmation of the Secondary Constraint and Absence of Ghost in Massive Gravity and Bimetric Gravity.” In: *JHEP* **1204** (2012), p. 123. doi: 10.1007/JHEP04(2012)123. arXiv: 1111.2070 [hep-th].
- [45] S.F. Hassan, Angnis Schmidt-May, and Mikael von Strauss. “Proof of Consistency of Nonlinear Massive Gravity in the Stückelberg Formulation.” In: *Phys.Lett. B* **715** (2012), pp. 335–339. doi: 10.1016/j.physletb.2012.07.018. arXiv: 1203.5283 [hep-th].
- [46] Kurt Hinterbichler and Rachel A. Rosen. “Interacting Spin-2 Fields.” In: *JHEP* **1207** (2012), p. 047. doi: 10.1007/JHEP07(2012)047. arXiv: 1203.5783 [hep-th].
- [47] S.F. Hassan and Rachel A. Rosen. “Bimetric Gravity from Ghost-free Massive Gravity.” In: *JHEP* **1202** (2012), p. 126. doi: 10.1007/JHEP02(2012)126. arXiv: 1109.3515 [hep-th].
- [48] Claudia de Rham. “Massive Gravity.” In: *Living Rev.Rel.* **17** (2014), p. 7. doi: 10.12942/lrr-2014-7. arXiv: 1401.4173 [hep-th].
- [49] Kurt Hinterbichler. “Theoretical Aspects of Massive Gravity.” In: *Rev.Mod.Phys.* **84** (2012), pp. 671–710. doi: 10.1103/RevModPhys.84.671. arXiv: 1105.3735 [hep-th].
- [50] Kurt Hinterbichler. “Cosmology of Massive Gravity and its Extensions.” In: *51st Rencontres de Moriond on Cosmology La Thuile*. 2017. arXiv: 1701.02873 [astro-ph.CO]. URL: <http://inspirehep.net/record/1508592/files/arXiv:1701.02873.pdf>.

- [51] Angnis Schmidt-May and Mikael von Strauss. “Recent developments in bimetric theory.” In: *J. Phys.* A49.18 (2016), p. 183001. doi: 10.1088/1751-8113/49/18/183001. arXiv: 1512.00021 [hep-th].
- [52] Adam Ross Solomon. “Cosmology Beyond Einstein.” PhD thesis. Cham: Cambridge U., 2015. doi: 10.1007/978-3-319-46621-7. arXiv: 1508.06859 [gr-qc]. URL: <http://www.springer.com/gp/book/9783319466200>.
- [53] Yashar Akrami, S. F. Hassan, Frank Könnig, Angnis Schmidt-May, and Adam R. Solomon. “Bimetric gravity is cosmologically viable.” In: *Phys. Lett.* B748 (2015), pp. 37–44. doi: 10.1016/j.physletb.2015.06.062. arXiv: 1503.07521 [gr-qc].
- [54] E. Mortsell and J. Enander. “Scalar instabilities in bimetric gravity: The Vainshtein mechanism and structure formation.” In: *JCAP* 1510.10 (2015), p. 044. doi: 10.1088/1475-7516/2015/10/044. arXiv: 1506.04977 [astro-ph.CO].
- [55] C. M. Will. *Theory and experiment in gravitational physics*. 1993. ISBN: 9780521439732.
- [56] Justin Khoury and Amanda Weltman. “Chameleon cosmology.” In: *Phys. Rev.* D69 (2004), p. 044026. doi: 10.1103/PhysRevD.69.044026. arXiv: astro-ph/0309411 [astro-ph].
- [57] Kurt Hinterbichler, Justin Khoury, Aaron Levy, and Andrew Matas. “Symmetron Cosmology.” In: *Phys. Rev.* D84 (2011), p. 103521. doi: 10.1103/PhysRevD.84.103521. arXiv: 1107.2112 [astro-ph.CO].
- [58] A.I. Vainshtein. “To the problem of nonvanishing gravitation mass.” In: *Phys.Lett.* B39 (1972), pp. 393–394. doi: 10.1016/0370-2693(72)90147-5.
- [59] Eugeny Babichev and Cédric Deffayet. “An introduction to the Vainshtein mechanism.” In: *Class.Quant.Grav.* 30 (2013), p. 184001. doi: 10.1088/0264-9381/30/18/184001. arXiv: 1304.7240 [gr-qc].

- [60] Y. Akrami et al. “Planck 2018 results. X. Constraints on inflation.” In: (2018). arXiv: 1807.06211 [astro-ph.CO].
- [61] E. Komatsu et al. “Seven-Year Wilkinson Microwave Anisotropy Probe (WMAP) Observations: Cosmological Interpretation.” In: *Astrophys. J. Suppl.* 192 (2011), p. 18. doi: 10.1088/0067-0049/192/2/18. arXiv: 1001.4538 [astro-ph.CO].
- [62] Urbano Franca and Rogerio Rosenfeld. “Fine tuning in quintessence models with exponential potentials.” In: *JHEP* 10 (2002), p. 015. doi: 10.1088/1126-6708/2002/10/015. arXiv: astro-ph/0206194 [astro-ph].
- [63] Renata Kallosh, Andrei D. Linde, Sergey Prokushkin, and Marina Shmakova. “Supergravity, dark energy and the fate of the universe.” In: *Phys. Rev.* D66 (2002), p. 123503. doi: 10.1103/PhysRevD.66.123503. arXiv: hep-th/0208156 [hep-th].
- [64] Yashar Akrami, Renata Kallosh, Andrei Linde, and Valeri Vardanyan. “Dark energy, α -attractors, and large-scale structure surveys.” In: *JCAP* 1806.06 (2018), p. 041. doi: 10.1088/1475-7516/2018/06/041. arXiv: 1712.09693 [hep-th].
- [65] Yashar Akrami, Philippe Brax, Anne-Christine Davis, and Valeri Vardanyan. “Neutron star merger GW170817 strongly constrains doubly coupled bigravity.” In: *Phys. Rev.* D97.12 (2018), p. 124010. doi: 10.1103/PhysRevD.97.124010. arXiv: 1803.09726 [astro-ph.CO].
- [66] Adam R. Solomon, Valeri Vardanyan, and Yashar Akrami. “Massive mimetic cosmology.” In: *Phys. Lett.* B794 (2019), pp. 135–142. doi: 10.1016/j.physletb.2019.05.045. arXiv: 1902.08533 [astro-ph.CO].
- [67] Omar Contigiani, Valeri Vardanyan, and Alessandra Silvestri. “Splashback radius in symmetron gravity.” In: *Phys. Rev.* D99.6 (2019), p. 064030. doi: 10.1103/PhysRevD.99.064030. arXiv: 1812.05568 [astro-ph.CO].

- [68] S. Bellucci, A. A. Saharian, D. H. Simonyan, and V. V. Vardanyan. “Fermionic currents in topologically nontrivial braneworlds.” In: *Phys. Rev.* D98.8 (2018), p. 085020. doi: 10.1103/PhysRevD.98.085020. arXiv: 1808.01577 [hep-th].
- [69] S. Bellucci, A. A. Saharian, and V. Vardanyan. “Fermionic currents in AdS spacetime with compact dimensions.” In: *Phys. Rev.* D96.6 (2017), p. 065025. doi: 10.1103/PhysRevD.96.065025. arXiv: 1707.08878 [hep-th].
- [70] Valeri Vardanyan, Yashar Akrami, Luca Amendola, and Alessandra Silvestri. “On nonlocally interacting metrics, and a simple proposal for cosmic acceleration.” In: *JCAP* 1803.03 (2018), p. 048. doi: 10.1088/1475-7516/2018/03/048. arXiv: 1702.08908 [gr-qc].
- [71] S. Bellucci, A. A. Saharian, and V. Vardanyan. “Hadamard function and the vacuum currents in braneworlds with compact dimensions: Two-brane geometry.” In: *Phys. Rev.* D93.8 (2016), p. 084011. doi: 10.1103/PhysRevD.93.084011. arXiv: 1512.06569 [hep-th].
- [72] S. Bellucci, A. A. Saharian, and V. Vardanyan. “Vacuum currents in braneworlds on AdS bulk with compact dimensions.” In: *JHEP* 11 (2015), p. 092. doi: 10.1007/JHEP11(2015)092. arXiv: 1508.07255 [hep-th].
- [73] Valeri Vardanyan and Luca Amendola. “How can we tell whether dark energy is composed of multiple fields?” In: *Phys. Rev.* D92.2 (2015), p. 024009. doi: 10.1103/PhysRevD.92.024009. arXiv: 1502.05922 [gr-qc].
- [74] E. R. Bezerra de Mello, A. A. Saharian, and V. Vardanyan. “Induced vacuum currents in anti-de Sitter space with toral dimensions.” In: *Phys. Lett.* B741 (2015), pp. 155–162. doi: 10.1016/j.physletb.2014.12.036. arXiv: 1410.2860 [hep-th].

- [75] Valeri Vardanyan, Daniel Weedman, and Lusine Sargsyan. “Seeking the Epoch of Maximum Luminosity for Dusty Quasars.” In: *Astrophys. J.* 790 (2014), p. 88. doi: 10.1088/0004-637X/790/2/88. arXiv: 1406.2002 [astro-ph.GA].
- [76] Renata Kallosh and Andrei Linde. “Universality Class in Conformal Inflation.” In: *JCAP* 1307 (2013), p. 002. doi: 10.1088/1475-7516/2013/07/002. arXiv: 1306.5220 [hep-th].
- [77] Sergio Ferrara, Renata Kallosh, Andrei Linde, and Massimo Porrati. “Minimal Supergravity Models of Inflation.” In: *Phys. Rev.* D88.8 (2013), p. 085038. doi: 10.1103/PhysRevD.88.085038. arXiv: 1307.7696 [hep-th].
- [78] Renata Kallosh, Andrei Linde, and Diederik Roest. “Superconformal Inflationary α -Attractors.” In: *JHEP* 11 (2013), p. 198. doi: 10.1007/JHEP11(2013)198. arXiv: 1311.0472 [hep-th].
- [79] Sergio Cecotti and Renata Kallosh. “Cosmological Attractor Models and Higher Curvature Supergravity.” In: *JHEP* 05 (2014), p. 114. doi: 10.1007/JHEP05(2014)114. arXiv: 1403.2932 [hep-th].
- [80] Mario Galante, Renata Kallosh, Andrei Linde, and Diederik Roest. “Unity of Cosmological Inflation Attractors.” In: *Phys. Rev. Lett.* 114.14 (2015), p. 141302. doi: 10.1103/PhysRevLett.114.141302. arXiv: 1412.3797 [hep-th].
- [81] Renata Kallosh and Andrei Linde. “Escher in the Sky.” In: *Comptes Rendus Physique* 16 (2015), pp. 914–927. doi: 10.1016/j.crhy.2015.07.004. arXiv: 1503.06785 [hep-th].
- [82] P. A. R. Ade et al. “Planck 2015 results. XX. Constraints on inflation.” In: *Astron. Astrophys.* 594 (2016), A20. doi: 10.1051/0004-6361/201525898. arXiv: 1502.02114 [astro-ph.CO].

- [83] Eric V. Linder. “Dark Energy from α -Attractors.” In: *Phys. Rev.* D91.12 (2015), p. 123012. doi: 10.1103/PhysRevD.91.123012. arXiv: 1505.00815 [astro-ph.CO].
- [84] Konstantinos Dimopoulos and Charlotte Owen. “Quintessential Inflation with α -attractors.” In: *JCAP* 1706.06 (2017), p. 027. doi: 10.1088/1475-7516/2017/06/027. arXiv: 1703.00305 [gr-qc].
- [85] Swagat S. Mishra, Varun Sahni, and Yuri Shtanov. “Sourcing Dark Matter and Dark Energy from α -attractors.” In: *JCAP* 1706.06 (2017), p. 045. doi: 10.1088/1475-7516/2017/06/045. arXiv: 1703.03295 [gr-qc].
- [86] Satadru Bag, Swagat S. Mishra, and Varun Sahni. “New tracker models of dark energy.” In: (2017). arXiv: 1709.09193 [gr-qc].
- [87] Carsten van de Bruck, Konstantinos Dimopoulos, Chris Longden, and Charlotte Owen. “Gauss-Bonnet-coupled Quintessential Inflation.” In: (2017). arXiv: 1707.06839 [astro-ph.CO].
- [88] Konstantinos Dimopoulos and Charlotte Owen. “Instant Preheating in Quintessential Inflation with α -Attractors.” In: (2017). arXiv: 1712.01760 [astro-ph.CO].
- [89] P. J. E. Peebles and A. Vilenkin. “Quintessential inflation.” In: *Phys. Rev.* D59 (1999), p. 063505. doi: 10.1103/PhysRevD.59.063505. arXiv: astro-ph/9810509 [astro-ph].
- [90] John Joseph M. Carrasco, Renata Kallosh, and Andrei Linde. “Cosmological Attractors and Initial Conditions for Inflation.” In: *Phys. Rev.* D92.6 (2015), p. 063519. doi: 10.1103/PhysRevD.92.063519. arXiv: 1506.00936 [hep-th].
- [91] Andrei D. Linde. “Inflation and Quantum Cosmology.” In: *in: Three Hundred Years of Gravitation, Cambridge U. Press, 1987* (Print-86-0888, July 1, 1986), pp. 604–630.

- [92] Yoshiki Ueno and Kazuhiro Yamamoto. “Constraints on α -attractor inflation and reheating.” In: *Phys. Rev.* D93.8 (2016), p. 083524. doi: 10.1103/PhysRevD.93.083524. arXiv: 1602.07427 [astro-ph.CO].
- [93] Mehdi Eshaghi, Moslem Zarei, Nematollah Riazi, and Ahmad Kiasatpour. “CMB and reheating constraints to α -attractor inflationary models.” In: *Phys. Rev.* D93.12 (2016), p. 123517. doi: 10.1103/PhysRevD.93.123517. arXiv: 1602.07914 [astro-ph.CO].
- [94] Renata Kallosh, Andrei Linde, Diederik Roest, and Yusuke Yamada. “ $\overline{D3}$ induced geometric inflation.” In: *JHEP* 07 (2017), p. 057. doi: 10.1007/JHEP07(2017)057. arXiv: 1705.09247 [hep-th].
- [95] C. L. Bennett et al. “Nine-Year Wilkinson Microwave Anisotropy Probe (WMAP) Observations: Final Maps and Results.” In: *Astrophys. J. Suppl.* 208 (2013), p. 20. doi: 10.1088/0067-0049/208/2/20. arXiv: 1212.5225 [astro-ph.CO].
- [96] 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. arXiv: 1502.01582 [astro-ph.CO].
- [97] Sigurd Naess et al. “The Atacama Cosmology Telescope: CMB Polarization at $200 < \ell < 9000$.” In: *JCAP* 1410.10 (2014), p. 007. doi: 10.1088/1475-7516/2014/10/007. arXiv: 1405.5524 [astro-ph.CO].
- [98] R. Keisler et al. “Measurements of Sub-degree B-mode Polarization in the Cosmic Microwave Background from 100 Square Degrees of SPTpol Data.” In: *Astrophys. J.* 807.2 (2015), p. 151. doi: 10.1088/0004-637X/807/2/151. arXiv: 1503.02315 [astro-ph.CO].
- [99] S. W. Henderson et al. “Advanced ACTPol Cryogenic Detector Arrays and Readout.” In: *J. Low. Temp. Phys.* 184.3-4 (2016), pp. 772–779. doi: 10.1007/s10909-016-1575-z. arXiv: 1510.02809 [astro-ph.IM].

- [100] B. A. Benson et al. "SPT-3G: A Next-Generation Cosmic Microwave Background Polarization Experiment on the South Pole Telescope." In: *Proc. SPIE Int. Soc. Opt. Eng.* 9153 (2014), 91531P. DOI: 10.1117/12.2057305. arXiv: 1407.2973 [astro-ph.IM].
- [101] Maximilian H. Abitbol et al. "CMB-S4 Technology Book, First Edition." In: (2017). arXiv: 1706.02464 [astro-ph.IM].
- [102] T. Matsumura et al. "LiteBIRD: Mission Overview and Focal Plane Layout." In: *J. Low. Temp. Phys.* 184.3-4 (2016), pp. 824–831. DOI: 10.1007/s10909-016-1542-8.
- [103] T. Matsumura et al. "Mission design of LiteBIRD." In: (2013). [*J. Low. Temp. Phys.* 176, 733 (2014)]. DOI: 10.1007/s10909-013-0996-1. arXiv: 1311.2847 [astro-ph.IM].
- [104] Catherine Heymans et al. "CFHTLenS: The Canada-France-Hawaii Telescope Lensing Survey." In: *Mon. Not. Roy. Astron. Soc.* 427 (2012), p. 146. DOI: 10.1111/j.1365-2966.2012.21952.x. arXiv: 1210.0032 [astro-ph.CO].
- [105] Liping Fu et al. "CFHTLenS: Cosmological constraints from a combination of cosmic shear two-point and three-point correlations." In: *Mon. Not. Roy. Astron. Soc.* 441 (2014), pp. 2725–2743. DOI: 10.1093/mnras/stu754. arXiv: 1404.5469 [astro-ph.CO].
- [106] H. Hildebrandt et al. "KiDS-450: Cosmological parameter constraints from tomographic weak gravitational lensing." In: *Mon. Not. Roy. Astron. Soc.* 465 (2017), p. 1454. DOI: 10.1093/mnras/stw2805. arXiv: 1606.05338 [astro-ph.CO].
- [107] F. Koehlinger et al. "KiDS-450: The tomographic weak lensing power spectrum and constraints on cosmological parameters." In: *Mon. Not. Roy. Astron. Soc.* 471 (2017), p. 4412. DOI: 10.1093/mnras/stx1820. arXiv: 1706.02892 [astro-ph.CO].

- [108] Kyle S. Dawson et al. “The SDSS-IV extended Baryon Oscillation Spectroscopic Survey: Overview and Early Data.” In: *Astron. J.* 151 (2016), p. 44. doi: 10.3847/0004-6256/151/2/44. arXiv: 1508.04473 [astro-ph.CO].
- [109] T. Abbott et al. “Cosmology from cosmic shear with Dark Energy Survey Science Verification data.” In: *Phys. Rev. D* 94.2 (2016), p. 022001. doi: 10.1103/PhysRevD.94.022001. arXiv: 1507.05552 [astro-ph.CO].
- [110] M. A. Troxel et al. “Dark Energy Survey Year 1 Results: Cosmological Constraints from Cosmic Shear.” In: (2017). arXiv: 1708.01538 [astro-ph.CO].
- [111] T. M. C. Abbott et al. “Dark Energy Survey Year 1 Results: Cosmological Constraints from Galaxy Clustering and Weak Lensing.” In: (2017). arXiv: 1708.01530 [astro-ph.CO].
- [112] Amir Aghamousa et al. “The DESI Experiment Part I: Science Targeting, and Survey Design.” In: (2016). arXiv: 1611.00036 [astro-ph.IM].
- [113] Amir Aghamousa et al. “The DESI Experiment Part II: Instrument Design.” In: (2016). arXiv: 1611.00037 [astro-ph.IM].
- [114] Paul A. Abell et al. “LSST Science Book, Version 2.0.” In: (2009). arXiv: 0912.0201 [astro-ph.IM].
- [115] Phil Marshall et al. “Science-Driven Optimization of the LSST Observing Strategy.” In: (2017). doi: 10.5281/zenodo.842713. arXiv: 1708.04058 [astro-ph.IM].
- [116] Philip Bull, Pedro G. Ferreira, Prina Patel, and Mario G. Santos. “Late-time cosmology with 21cm intensity mapping experiments.” In: *Astrophys. J.* 803.1 (2015), p. 21. doi: 10.1088/0004-637X/803/1/21. arXiv: 1405.1452 [astro-ph.CO].

- [117] Matt J. Jarvis, David Bacon, Chris Blake, Michael L. Brown, Sam N. Lindsay, Alvise Raccanelli, Mario Santos, and Dominik Schwarz. “Cosmology with SKA Radio Continuum Surveys.” In: (2015). arXiv: 1501.03825 [astro-ph.CO].
- [118] David Bacon et al. “Synergy between the Large Synoptic Survey Telescope and the Square Kilometre Array.” In: *PoS AASKA14* (2015), p. 145. arXiv: 1501.03977 [astro-ph.CO].
- [119] Thomas D. Kitching, David Bacon, Michael L. Brown, Philip Bull, Jason D. McEwen, Masamune Oguri, Roberto Scaramella, Keitaro Takahashi, Kinwah Wu, and Daisuke Yamauchi. “Euclid & SKA Synergies.” In: (2015). arXiv: 1501.03978 [astro-ph.CO].
- [120] S. Yahya, P. Bull, M. G. Santos, M. Silva, R. Maartens, P. Okouma, and B. Bassett. “Cosmological performance of SKA HI galaxy surveys.” In: *Mon. Not. Roy. Astron. Soc.* 450.3 (2015), pp. 2251–2260. doi: 10.1093/mnras/stv695. arXiv: 1412.4700 [astro-ph.CO].
- [121] Mario G. Santos et al. “Cosmology with a SKA HI intensity mapping survey.” In: (2015). arXiv: 1501.03989 [astro-ph.CO].
- [122] R. Laureijs et al. “Euclid Definition Study Report.” In: (2011). arXiv: 1110.3193 [astro-ph.CO].
- [123] Luca Amendola et al. “Cosmology and Fundamental Physics with the Euclid Satellite.” In: (2016). arXiv: 1606.00180 [astro-ph.CO].
- [124] D. Spergel et al. “Wide-Field InfrarRed Survey Telescope-Astrophysics Focused Telescope Assets WFIRST-AFTA 2015 Report.” In: (2015). arXiv: 1503.03757 [astro-ph.IM].
- [125] R. Hounsell et al. “Simulations of the WFIRST Supernova Survey and Forecasts of Cosmological Constraints.” In: (2017). arXiv: 1702.01747 [astro-ph.IM].

- [126] Sergio Ferrara and Renata Kallosh. “Seven-disk manifold, α -attractors, and B modes.” In: *Phys. Rev.* D94.12 (2016), p. 126015. doi: 10.1103/PhysRevD.94.126015. arXiv: 1610.04163 [hep-th].
- [127] Renata Kallosh, Andrei Linde, Timm Wräse, and Yusuke Yamada. “Maximal Supersymmetry and B-Mode Targets.” In: *JHEP* 04 (2017), p. 144. doi: 10.1007/JHEP04(2017)144. arXiv: 1704.04829 [hep-th].
- [128] Andrei D. Linde. “Chaotic Inflation.” In: *Phys. Lett.* B129 (1983), pp. 177–181. doi: 10.1016/0370-2693(83)90837-7.
- [129] Renata Kallosh and Andrei Linde. “Planck, LHC, and α -attractors.” In: *Phys. Rev.* D91 (2015), p. 083528. doi: 10.1103/PhysRevD.91.083528. arXiv: 1502.07733 [astro-ph.CO].
- [130] P. A. R. Ade et al. “Planck 2015 results. XIII. Cosmological parameters.” In: *Astron. Astrophys.* 594 (2016), A13. doi: 10.1051/0004-6361/201525830. arXiv: 1502.01589 [astro-ph.CO].
- [131] N. Aghanim et al. “Planck intermediate results. LI. Features in the cosmic microwave background temperature power spectrum and shifts in cosmological parameters.” In: *Astron. Astrophys.* 607 (2017), A95. doi: 10.1051/0004-6361/201629504. arXiv: 1608.02487 [astro-ph.CO].
- [132] Evan McDonough and Marco Scalisi. “Inflation from Nilpotent Kähler Corrections.” In: *JCAP* 1611.11 (2016), p. 028. doi: 10.1088/1475-7516/2016/11/028. arXiv: 1609.00364 [hep-th].
- [133] Matthew Dodelson, Xi Dong, Eva Silverstein, and Gonzalo Torroba. “New solutions with accelerated expansion in string theory.” In: *JHEP* 12 (2014), p. 050. doi: 10.1007/JHEP12(2014)050. arXiv: 1310.5297 [hep-th].
- [134] Jerome Martin, Christophe Ringeval, and Vincent Vennin. “Encyclopedia Inflationaris.” In: *Phys. Dark Univ.* 5–6 (2014), pp. 75–235. doi: 10.1016/j.dark.2014.01.003. arXiv: 1303.3787 [astro-ph.CO].

- [135] Renata Kallosh and Andrei D. Linde. "Dark energy and the fate of the universe." In: *JCAP* 0302 (2003), p. 002. doi: 10.1088/1475-7516/2003/02/002. arXiv: astro-ph/0301087 [astro-ph].
- [136] John Joseph M. Carrasco, Renata Kallosh, Andrei Linde, and Diederik Roest. "Hyperbolic geometry of cosmological attractors." In: *Phys. Rev.* D92.4 (2015), p. 041301. doi: 10.1103/PhysRevD.92.041301. arXiv: 1504.05557 [hep-th].
- [137] Renata Kallosh and Andrei Linde. "Cosmological Attractors and Asymptotic Freedom of the Inflaton Field." In: *JCAP* 1606.06 (2016), p. 047. doi: 10.1088/1475-7516/2016/06/047. arXiv: 1604.00444 [hep-th].
- [138] M. Cicoli, C. P. Burgess, and F. Quevedo. "Fibre Inflation: Observable Gravity Waves from IIB String Compactifications." In: *JCAP* 0903 (2009), p. 013. doi: 10.1088/1475-7516/2009/03/013. arXiv: 0808.0691 [hep-th].
- [139] Renata Kallosh, Andrei Linde, Diederik Roest, Alexander Westphal, and Yusuke Yamada. "Fibre Inflation and α -attractors." In: (2017). arXiv: 1707.05830 [hep-th].
- [140] Renata Kallosh, Andrei Linde, and Timm Wrane. "Coupling the Inflationary Sector to Matter." In: *JHEP* 04 (2016), p. 027. doi: 10.1007/JHEP04(2016)027. arXiv: 1602.07818 [hep-th].
- [141] Philippe Brax, Carsten van de Bruck, Jerome Martin, and Anne-Christine Davis. "Decoupling Dark Energy from Matter." In: *JCAP* 0909 (2009), p. 032. doi: 10.1088/1475-7516/2009/09/032. arXiv: 0904.3471 [hep-th].
- [142] Daniel Baumann. *The Physics of Inflation: A Course for Graduate Students in Particle Physics and Cosmology*. <http://www.damtp.cam.ac.uk/user/db275/TEACHING/INFLATION/Lectures.pdf>.

- [143] Daniel Baumann. "Inflation." In: *Physics of the large and the small, TASI 09, proceedings of the Theoretical Advanced Study Institute in Elementary Particle Physics, Boulder, Colorado, USA, 1-26 June 2009.* 2011, pp. 523–686. DOI: 10.1142/9789814327183_0010. arXiv: 0907.5424 [hep-th]. URL: <https://inspirehep.net/record/827549/files/arXiv:0907.5424.pdf>.
- [144] David H. Lyth and Antonio Riotto. "Particle physics models of inflation and the cosmological density perturbation." In: *Phys. Rept.* 314 (1999), pp. 1–146. DOI: 10.1016/S0370-1573(98)00128-8. arXiv: hep-ph/9807278 [hep-ph].
- [145] M. Chevallier and D. Polarski. "Accelerating Universes with Scaling Dark Matter." In: *International Journal of Modern Physics D* 10 (2001), pp. 213–223. DOI: 10.1142/S0218271801000822. eprint: gr-qc/0009008.
- [146] E. V. Linder. "Exploring the Expansion History of the Universe." In: *Physical Review Letters* 90.9, 091301 (Mar. 2003), p. 091301. DOI: 10.1103/PhysRevLett.90.091301. eprint: astro-ph/0208512.
- [147] L. H. Ford. "Gravitational Particle Creation and Inflation." In: *Phys. Rev. D* 35 (1987), p. 2955. DOI: 10.1103/PhysRevD.35.2955.
- [148] E. J. Chun, S. Scopel, and I. Zaballa. "Gravitational reheating in quintessential inflation." In: *JCAP* 0907 (2009), p. 022. DOI: 10.1088/1475-7516/2009/07/022. arXiv: 0904.0675 [hep-ph].
- [149] Ya. B. Zeldovich and A.A. Starobinsky. "Particle Production and Vacuum Polarization in an Anisotropic Gravitational Field." In: *JETP* 34 (1972), p. 1159.
- [150] Ya. B. Zeldovich and A.A. Starobinsky. "Rate of particle production in gravitational fields." In: *JETP Lett.* 26 (1977), p. 252.

- [151] Alexei A. Starobinsky. “A New Type of Isotropic Cosmological Models Without Singularity.” In: *Phys. Lett.* 91B (1980), pp. 99–102. doi: 10.1016/0370-2693(80)90670-X.
- [152] Gary N. Felder, Lev Kofman, and Andrei D. Linde. “Instant preheating.” In: *Phys. Rev.* D59 (1999), p. 123523. doi: 10.1103/PhysRevD.59.123523. arXiv: hep-ph/9812289 [hep-ph].
- [153] Gary N. Felder, Lev Kofman, and Andrei D. Linde. “Inflation and preheating in NO models.” In: *Phys. Rev.* D60 (1999), p. 103505. doi: 10.1103/PhysRevD.60.103505. arXiv: hep-ph/9903350 [hep-ph].
- [154] Lev Kofman, Andrei D. Linde, Xiao Liu, Alexander Maloney, Liam McAllister, and Eva Silverstein. “Beauty is attractive: Moduli trapping at enhanced symmetry points.” In: *JHEP* 05 (2004), p. 030. doi: 10.1088/1126-6708/2004/05/030. arXiv: hep-th/0403001 [hep-th].
- [155] Andrei D. Linde. “Particle physics and inflationary cosmology.” In: *Contemp. Concepts Phys.* 5 (1990), pp. 1–362. arXiv: hep-th/0503203 [hep-th].
- [156] Daniel Green, Bart Horn, Leonardo Senatore, and Eva Silverstein. “Trapped Inflation.” In: *Phys. Rev.* D80 (2009), p. 063533. doi: 10.1103/PhysRevD.80.063533. arXiv: 0902.1006 [hep-th].
- [157] Anshuman Maharana and Ivonne Zavala. “Post-inflationary Scalar Tensor Cosmology and Inflationary Parameters.” In: (2017). arXiv: 1712.07071 [hep-ph].
- [158] 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. arXiv: 1401.4064 [astro-ph.CO].

- [159] Florian Beutler, Chris Blake, Matthew Colless, D. Heath Jones, Lister Staveley-Smith, Lachlan Campbell, Quentin Parker, Will Saunders, and Fred Watson. "The 6dF Galaxy Survey: Baryon Acoustic Oscillations and the Local Hubble Constant." In: *Mon. Not. Roy. Astron. Soc.* 416 (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) [astro-ph.CO].
- [160] Chris Blake et al. "The WiggleZ Dark Energy Survey: mapping the distance-redshift relation with baryon acoustic oscillations." In: *Mon. Not. Roy. Astron. Soc.* 418 (2011), pp. 1707–1724. doi: [10.1111/j.1365-2966.2011.19592.x](https://doi.org/10.1111/j.1365-2966.2011.19592.x). arXiv: [1108.2635](https://arxiv.org/abs/1108.2635) [astro-ph.CO].
- [161] Lauren Anderson et al. "The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: Baryon Acoustic Oscillations in the Data Release 9 Spectroscopic Galaxy Sample." In: *Mon. Not. Roy. Astron. Soc.* 427.4 (2013), pp. 3435–3467. doi: [10.1111/j.1365-2966.2012.22066.x](https://doi.org/10.1111/j.1365-2966.2012.22066.x). arXiv: [1203.6594](https://arxiv.org/abs/1203.6594) [astro-ph.CO].
- [162] Lauren Anderson et al. "The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: baryon acoustic oscillations in the Data Releases 10 and 11 Galaxy samples." In: *Mon. Not. Roy. Astron. Soc.* 441.1 (2014), pp. 24–62. doi: [10.1093/mnras/stu523](https://doi.org/10.1093/mnras/stu523). arXiv: [1312.4877](https://arxiv.org/abs/1312.4877) [astro-ph.CO].
- [163] Ashley J. Ross, Lado Samushia, Cullan Howlett, Will J. Percival, Angela Burden, and Marc Manera. "The clustering of the SDSS DR7 main Galaxy sample - I. A 4 per cent distance measure at $z = 0.15$." In: *Mon. Not. Roy. Astron. Soc.* 449.1 (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) [astro-ph.CO].
- [164] Adam G. Riess et al. "A 2.4% Determination of the Local Value of the Hubble Constant." In: *Astrophys. J.* 826.1 (2016), p. 56. doi: [10.3847/0004-637X/826/1/56](https://doi.org/10.3847/0004-637X/826/1/56). arXiv: [1604.01424](https://arxiv.org/abs/1604.01424) [astro-ph.CO].

- [165] C. Wetterich. "Cosmology and the Fate of Dilatation Symmetry." In: *Nucl. Phys.* B302 (1988), pp. 668–696. doi: 10.1016/0550-3213(88)90193-9.
- [166] Bharat Ratra and P. J. E. Peebles. "Cosmological Consequences of a Rolling Homogeneous Scalar Field." In: *Phys. Rev.* D37 (1988), p. 3406. doi: 10.1103/PhysRevD.37.3406.
- [167] Renata Kallosh, Jan Kratochvil, Andrei D. Linde, Eric V. Linder, and Marina Shmakova. "Observational bounds on cosmic doomsday." In: *JCAP* 0310 (2003), p. 015. doi: 10.1088/1475-7516/2003/10/015. arXiv: astro-ph/0307185 [astro-ph].
- [168] J. Garriga and A. Vilenkin. "Testable anthropic predictions for dark energy." In: *Phys. Rev.* D67 (2003), p. 043503. doi: 10.1103/PhysRevD.67.043503. arXiv: astro-ph/0210358 [astro-ph].
- [169] Renata Kallosh and Andrei D. Linde. "M theory, cosmological constant and anthropic principle." In: *Phys. Rev.* D67 (2003), p. 023510. doi: 10.1103/PhysRevD.67.023510. arXiv: hep-th/0208157 [hep-th].
- [170] Jaume Garriga, Andrei D. Linde, and Alexander Vilenkin. "Dark energy equation of state and anthropic selection." In: *Phys. Rev.* D69 (2004), p. 063521. doi: 10.1103/PhysRevD.69.063521. arXiv: hep-th/0310034 [hep-th].
- [171] Andrei Linde. "On the problem of initial conditions for inflation." In: *Black Holes, Gravitational Waves and Spacetime Singularities Rome, Italy, May 9-12, 2017*. 2017. arXiv: 1710.04278 [hep-th]. URL: <http://inspirehep.net/record/1630432/files/arXiv:1710.04278.pdf>.
- [172] Yashar Akrami, Tomi S. Koivisto, David F. Mota, and Marit Sandstad. "Bimetric gravity doubly coupled to matter: theory and cosmological implications." In: *JCAP* 1310 (2013), p. 046. doi: 10.1088/1475-7516/2013/10/046. arXiv: 1306.0004 [hep-th].

- [173] Yashar Akrami, Tomi S. Koivisto, and Adam R. Solomon. “The nature of spacetime in bigravity: two metrics or none?” In: *Gen.Rel.Grav.* 47 (2014), p. 1838. doi: 10.1007/s10714-014-1838-4. arXiv: 1404.0006 [gr-qc].
- [174] S.F. Hassan, Angnis Schmidt-May, and Mikael von Strauss. “On Consistent Theories of Massive Spin-2 Fields Coupled to Gravity.” In: *JHEP* 1305 (2013), p. 086. doi: 10.1007/JHEP05(2013)086. arXiv: 1208.1515 [hep-th].
- [175] Nicola Tamanini, Emmanuel N. Saridakis, and Tomi S. Koivisto. “The Cosmology of Interacting Spin-2 Fields.” In: *JCAP* 1402 (2014), p. 015. doi: 10.1088/1475-7516/2014/02/015. arXiv: 1307.5984 [hep-th].
- [176] Yasuho Yamashita, Antonio De Felice, and Takahiro Tanaka. “Appearance of Boulware-Deser ghost in bigravity with doubly coupled matter.” In: *Int.J.Mod.Phys. D* 23 (2014), p. 3003. doi: 10.1142/S0218271814430032. arXiv: 1408.0487 [hep-th].
- [177] Claudia de Rham, Lavinia Heisenberg, and Raquel H. Ribeiro. “On couplings to matter in massive (bi-)gravity.” In: *Class.Quant.Grav.* 32.3 (2015), p. 035022. doi: 10.1088/0264-9381/32/3/035022. arXiv: 1408.1678 [hep-th].
- [178] S.F. Hassan, Mikica Kocic, and Angnis Schmidt-May. “Absence of ghost in a new bimetric-matter coupling.” In: (2014). arXiv: 1409.1909 [hep-th].
- [179] Jonas Enander, Adam R. Solomon, Yashar Akrami, and Edvard Mortsell. “Cosmic expansion histories in massive bigravity with symmetric matter coupling.” In: *JCAP* 01 (2015), p. 006. doi: 10.1088/1475-7516/2015/01/006. arXiv: 1409.2860 [astro-ph.CO].

- [180] Adam R. Solomon, Jonas Enander, Yashar Akrami, Tomi S. Koivisto, Frank KÖnnig, et al. “Cosmological viability of massive gravity with generalized matter coupling.” In: *JCAP* 1504 (2015), p. 027. doi: 10.1088/1475-7516/2015/04/027. arXiv: 1409.8300 [astro-ph.CO].
- [181] Angnis Schmidt-May. “Mass eigenstates in bimetric theory with matter coupling.” In: *JCAP* 1501.01 (2015), p. 039. doi: 10.1088/1475-7516/2015/01/039. arXiv: 1409.3146 [gr-qc].
- [182] Claudia de Rham, Lavinia Heisenberg, and Raquel H. Ribeiro. “Ghosts & Matter Couplings in Massive (bi-&multi-)Gravity.” In: *Phys.Rev.* D90 (2014), p. 124042. doi: 10.1103/PhysRevD.90.124042. arXiv: 1409.3834 [hep-th].
- [183] A. Emir Gümrükçüoğlu, Lavinia Heisenberg, and Shinji Mukohyama. “Cosmological perturbations in massive gravity with doubly coupled matter.” In: *JCAP* 1502 (2015), p. 022. doi: 10.1088/1475-7516/2015/02/022. arXiv: 1409.7260 [hep-th].
- [184] Lavinia Heisenberg. “Quantum corrections in massive bigravity and new effective composite metrics.” In: *Class.Quant.Grav.* 32.10 (2015), p. 105011. doi: 10.1088/0264-9381/32/10/105011. arXiv: 1410.4239 [hep-th].
- [185] A. Emir Gümrükçüoğlu, Lavinia Heisenberg, Shinji Mukohyama, and Norihiro Tanahashi. “Cosmology in bimetric theory with an effective composite coupling to matter.” In: *JCAP* 1504.04 (2015), p. 008. doi: 10.1088/1475-7516/2015/04/008. arXiv: 1501.02790 [hep-th].
- [186] Kurt Hinterbichler and Rachel A. Rosen. “Note on ghost-free matter couplings in massive gravity and multigravity.” In: *Phys. Rev.* D92.2 (2015), p. 024030. doi: 10.1103/PhysRevD.92.024030. arXiv: 1503.06796 [hep-th].

- [187] Lavinia Heisenberg. "More on effective composite metrics." In: *Phys. Rev.* D92 (2015), p. 023525. doi: 10.1103/PhysRevD.92.023525. arXiv: 1505.02966 [hep-th].
- [188] Lavinia Heisenberg. "Non-minimal derivative couplings of the composite metric." In: *JCAP* 1511.11 (2015), p. 005. doi: 10.1088/1475-7516/2015/11/005. arXiv: 1506.00580 [hep-th].
- [189] Macarena Lagos and Johannes Noller. "New massive bigravity cosmologies with double matter coupling." In: *JCAP* 1601.01 (2016), p. 023. doi: 10.1088/1475-7516/2016/01/023. arXiv: 1508.05864 [gr-qc].
- [190] Scott Melville and Johannes Noller. "Generalised matter couplings in massive bigravity." In: *JHEP* 01 (2016), p. 094. doi: 10.1007/JHEP01(2016)094. arXiv: 1511.01485 [hep-th].
- [191] Lavinia Heisenberg and Alexandre Refregier. "Cosmology in massive gravity with effective composite metric." In: *JCAP* 1609.09 (2016), p. 020. doi: 10.1088/1475-7516/2016/09/020. arXiv: 1604.07306 [gr-qc].
- [192] Philippe Brax, Anne-Christine Davis, and Johannes Noller. "Dark Energy and Doubly Coupled Bigravity." In: *Class. Quant. Grav.* 34.9 (2017), p. 095014. doi: 10.1088/1361-6382/aa6856. arXiv: 1606.05590 [gr-qc].
- [193] Philippe Brax, Anne-Christine Davis, and Johannes Noller. "Gravitational Waves in Doubly Coupled Bigravity." In: *Phys. Rev.* D96.2 (2017), p. 023518. doi: 10.1103/PhysRevD.96.023518. arXiv: 1703.08016 [gr-qc].
- [194] Philippe Brax, Sebastian Cespedes, and Anne-Christine Davis. "Signatures of graviton masses on the CMB." In: (2017). arXiv: 1710.09818 [astro-ph.CO].

- [195] D.G. Boulware and Stanley Deser. “Can gravitation have a finite range?” In: *Phys.Rev.* D6 (1972), pp. 3368–3382. doi: 10.1103/PhysRevD.6.3368.
- [196] Denis Comelli, Marco Crisostomi, Kazuya Koyama, Luigi Pilo, and Gianmassimo Tasinato. “Cosmology of bigravity with doubly coupled matter.” In: *JCAP* 1504 (2015), p. 026. doi: 10.1088/1475-7516/2015/04/026. arXiv: 1501.00864 [hep-th].
- [197] Antonio De Felice, Takashi Nakamura, and Takahiro Tanaka. “Possible existence of viable models of bi-gravity with detectable graviton oscillations by gravitational wave detectors.” In: *PTEP* 2014 (2014), 043E01. doi: 10.1093/ptep/ptu024. arXiv: 1304.3920 [gr-qc].
- [198] Ippocratis D. Saltas, Ignacy Sawicki, Luca Amendola, and Martin Kunz. “Anisotropic Stress as a Signature of Nonstandard Propagation of Gravitational Waves.” In: *Phys. Rev. Lett.* 113.19 (2014), p. 191101. doi: 10.1103/PhysRevLett.113.191101. arXiv: 1406.7139 [astro-ph.CO].
- [199] Giulia Cusin, Ruth Durrer, Pietro Guarato, and Marielle Motta. “Gravitational waves in bigravity cosmology.” In: *JCAP* 1505.05 (2015), p. 030. doi: 10.1088/1475-7516/2015/05/030. arXiv: 1412.5979 [astro-ph.CO].
- [200] Tatsuya Narikawa, Koh Ueno, Hideyuki Tagoshi, Takahiro Tanaka, Nobuyuki Kanda, and Takashi Nakamura. “Detectability of bigravity with graviton oscillations using gravitational wave observations.” In: *Phys. Rev.* D91 (2015), p. 062007. doi: 10.1103/PhysRevD.91.062007. arXiv: 1412.8074 [gr-qc].
- [201] Luca Amendola, Frank Könnig, Matteo Martinelli, Valeria Pettorino, and Miguel Zumalacarregui. “Surfing gravitational waves: can bi-gravity survive growing tensor modes?” In: *JCAP* 1505 (2015), p. 052. doi: 10.1088/1475-7516/2015/05/052. arXiv: 1503.02490 [astro-ph.CO].

- [202] Matthew Johnson and Alexandra Terrana. “Tensor Modes in Bigravity: Primordial to Present.” In: *Phys. Rev.* D92.4 (2015), p. 044001. DOI: 10.1103/PhysRevD.92.044001. arXiv: 1503.05560 [astro-ph.CO].
- [203] Kevin Max, Moritz Platscher, and Juri Smirnov. “Gravitational Wave Oscillations in Bigravity.” In: *Phys. Rev. Lett.* 119.11 (2017), p. 111101. DOI: 10.1103/PhysRevLett.119.111101. arXiv: 1703.07785 [gr-qc].
- [204] Atsushi Nishizawa. “Generalized framework for testing gravity with gravitational-wave propagation. I. Formulation.” In: (2017). arXiv: 1710.04825 [gr-qc].
- [205] Kevin Max, Moritz Platscher, and Juri Smirnov. “Decoherence of Gravitational Wave Oscillations in Bigravity.” In: (2017). arXiv: 1712.06601 [gr-qc].
- [206] Yashar Akrami, Tomi S. Koivisto, and Marit Sandstad. “Cosmological constraints on ghost-free bigravity: background dynamics and late-time acceleration.” In: *Proceedings, 13th Marcel Grossmann Meeting (MG13)*. 2015, pp. 1252–1254. DOI: 10.1142/9789814623995_0138. arXiv: 1302.5268 [astro-ph.CO]. URL: <https://inspirehep.net/record/1220533/files/arXiv:1302.5268.pdf>.
- [207] Ali H. Chamseddine and Viatcheslav Mukhanov. “Ghost Free Mimetic Massive Gravity.” In: *JHEP* 06 (2018), p. 060. DOI: 10.1007/JHEP06(2018)060. arXiv: 1805.06283 [hep-th].
- [208] Ali H. Chamseddine and Viatcheslav Mukhanov. “Mimetic Massive Gravity: Beyond Linear Approximation.” In: *JHEP* 06 (2018), p. 062. DOI: 10.1007/JHEP06(2018)062. arXiv: 1805.06598 [hep-th].
- [209] Ali H. Chamseddine and Viatcheslav Mukhanov. “Mimetic Dark Matter.” In: *JHEP* 11 (2013), p. 135. DOI: 10.1007/JHEP11(2013)135. arXiv: 1308.5410 [astro-ph.CO].

- [210] C.J. Isham, Abdus Salam, and J.A. Strathdee. “F-dominance of gravity.” In: *Phys.Rev. D3* (1971), pp. 867–873. doi: 10.1103/PhysRevD.3.867.
- [211] Paolo Creminelli, Alberto Nicolis, Michele Papucci, and Enrico Trincherini. “Ghosts in massive gravity.” In: *JHEP* 0509 (2005), p. 003. doi: 10.1088/1126-6708/2005/09/003. arXiv: hep-th/0505147 [hep-th].
- [212] Eugene A. Lim, Ignacy Sawicki, and Alexander Vikman. “Dust of Dark Energy.” In: *JCAP* 1005 (2010), p. 012. doi: 10.1088/1475-7516/2010/05/012. arXiv: 1003.5751 [astro-ph.CO].
- [213] Leila Mirzagholi and Alexander Vikman. “Imperfect Dark Matter.” In: *JCAP* 1506 (2015), p. 028. doi: 10.1088/1475-7516/2015/06/028. arXiv: 1412.7136 [gr-qc].
- [214] H. van Dam and M. J. G. Veltman. “Massive and massless Yang-Mills and gravitational fields.” In: *Nucl. Phys. B22* (1970), pp. 397–411. doi: 10.1016/0550-3213(70)90416-5.
- [215] V. I. Zakharov. “Linearized gravitation theory and the graviton mass.” In: *JETP Lett.* 12 (1970). [*Pisma Zh. Eksp. Teor. Fiz.* 12, 447 (1970)], p. 312.
- [216] Atsushi Higuchi. “Forbidden Mass Range for Spin-2 Field Theory in De Sitter Space-time.” In: *Nucl.Phys. B282* (1987), p. 397. doi: 10.1016/0550-3213(87)90691-2.
- [217] S. L. Dubovsky. “Phases of massive gravity.” In: *JHEP* 10 (2004), p. 076. doi: 10.1088/1126-6708/2004/10/076. arXiv: hep-th/0409124 [hep-th].
- [218] D. Blas, D. Comelli, F. Nesti, and L. Pilo. “Lorentz Breaking Massive Gravity in Curved Space.” In: *Phys. Rev. D80* (2009), p. 044025. doi: 10.1103/PhysRevD.80.044025. arXiv: 0905.1699 [hep-th].

- [219] Macarena Lagos, Máximo Bañados, Pedro G. Ferreira, and Sebastián García-Sáenz. “Noether Identities and Gauge-Fixing the Action for Cosmological Perturbations.” In: *Phys. Rev.* D89 (2014), p. 024034. doi: 10.1103/PhysRevD.89.024034. arXiv: 1311.3828 [gr-qc].
- [220] S. Dubovsky, T. Gregoire, A. Nicolis, and R. Rattazzi. “Null energy condition and superluminal propagation.” In: *JHEP* 03 (2006), p. 025. doi: 10.1088/1126-6708/2006/03/025. arXiv: hep-th/0512260 [hep-th].
- [221] Solomon Endlich, Alberto Nicolis, Riccardo Rattazzi, and Junpu Wang. “The Quantum mechanics of perfect fluids.” In: *JHEP* 04 (2011), p. 102. doi: 10.1007/JHEP04(2011)102. arXiv: 1011.6396 [hep-th].
- [222] G. R. Dvali, Gregory Gabadadze, and Massimo Porrati. “4-D gravity on a brane in 5-D Minkowski space.” In: *Phys. Lett.* B485 (2000), pp. 208–214. doi: 10.1016/S0370-2693(00)00669-9. arXiv: hep-th/0005016 [hep-th].
- [223] Cedric Deffayet. “Cosmology on a brane in Minkowski bulk.” In: *Phys. Lett.* B502 (2001), pp. 199–208. doi: 10.1016/S0370-2693(01)00160-5. arXiv: hep-th/0010186 [hep-th].
- [224] Cedric Deffayet, G. R. Dvali, and Gregory Gabadadze. “Accelerated universe from gravity leaking to extra dimensions.” In: *Phys. Rev.* D65 (2002), p. 044023. doi: 10.1103/PhysRevD.65.044023. arXiv: astro-ph/0105068 [astro-ph].
- [225] Dmitry Gorbunov, Kazuya Koyama, and Sergei Sibiryakov. “More on ghosts in DGP model.” In: *Phys. Rev.* D73 (2006), p. 044016. doi: 10.1103/PhysRevD.73.044016. arXiv: hep-th/0512097 [hep-th].
- [226] Christos Charmousis, Ruth Gregory, Nemanja Kaloper, and Antonio Padilla. “DGP Spectroscopy.” In: *JHEP* 10 (2006), p. 066. doi: 10.1088/1126-6708/2006/10/066. arXiv: hep-th/0604086 [hep-th].

- [227] Justin Khoury, Jeremy Sakstein, and Adam R. Solomon. "Superfluids and the Cosmological Constant Problem." In: *JCAP* 1808.08 (2018), p. 024. DOI: 10.1088/1475-7516/2018/08/024. arXiv: 1805.05937 [hep-th].
- [228] Xue-lei Chen, Robert J. Scherrer, and Gary Steigman. "Extended quintessence and the primordial helium abundance." In: *Phys. Rev.* D63 (2001), p. 123504. DOI: 10.1103/PhysRevD.63.123504. arXiv: astro-ph/0011531 [astro-ph].
- [229] Richard H. Cyburt, Brian D. Fields, Keith A. Olive, and Tsung-Han Yeh. "Big Bang Nucleosynthesis: 2015." In: *Rev. Mod. Phys.* 88 (2016), p. 015004. DOI: 10.1103/RevModPhys.88.015004. arXiv: 1505.01076 [astro-ph.CO].
- [230] D. J. Fixsen. "The Temperature of the Cosmic Microwave Background." In: 707 (2009), pp. 916–920. DOI: 10.1088/0004-637X/707/2/916. arXiv: 0911.1955 [astro-ph.CO].
- [231] Benjamin P. Abbott et al. "GW170104: Observation of a 50-Solar-Mass Binary Black Hole Coalescence at Redshift 0.2." In: *Phys. Rev. Lett.* 118.22 (2017). [Erratum: *Phys. Rev. Lett.* 121,no.12,129901(2018)], p. 221101. DOI: 10.1103/PhysRevLett.118.221101 , 10.1103/PhysRevLett.121.129901. arXiv: 1706.01812 [gr-qc].
- [232] Claudia de Rham, J. Tate Deskins, Andrew J. Tolley, and Shuang-Yong Zhou. "Graviton Mass Bounds." In: *Rev. Mod. Phys.* 89.2 (2017), p. 025004. DOI: 10.1103/RevModPhys.89.025004. arXiv: 1606.08462 [astro-ph.CO].
- [233] Jonas Enander, Yashar Akrami, Edvard Mörtsell, Malin Renneby, and Adam R. Solomon. "Integrated Sachs-Wolfe effect in massive bi-gravity." In: *Phys. Rev.* D91 (2015), p. 084046. DOI: 10.1103/PhysRevD.91.084046. arXiv: 1501.02140 [astro-ph.CO].

- [234] Gong-Bo Zhao, Tommaso Giannantonio, Levon Pogosian, Alessandra Silvestri, David J. Bacon, Kazuya Koyama, Robert C. Nichol, and Yong-Seon Song. “Probing modifications of General Relativity using current cosmological observations.” In: *Phys. Rev.* D81 (2010), p. 103510. DOI: 10.1103/PhysRevD.81.103510. arXiv: 1003.0001 [astro-ph.CO].
- [235] P. A. R. Ade et al. “Planck 2015 results. XIV. Dark energy and modified gravity.” In: *Astron. Astrophys.* 594 (2016), A14. DOI: 10.1051/0004-6361/201525814. arXiv: 1502.01590 [astro-ph.CO].
- [236] Levon Pogosian and Alessandra Silvestri. “What can cosmology tell us about gravity? Constraining Horndeski gravity with Σ and μ .” In: *Phys. Rev.* D94.10 (2016), p. 104014. DOI: 10.1103/PhysRevD.94.104014. arXiv: 1606.05339 [astro-ph.CO].
- [237] Benedikt Diemer and Andrey V. Kravtsov. “Dependence of the outer density profiles of halos on their mass accretion rate.” In: *Astrophys. J.* 789 (2014), p. 1. DOI: 10.1088/0004-637X/789/1/1. arXiv: 1401.1216 [astro-ph.CO].
- [238] J. A. Fillmore and P. Goldreich. “Self-similar gravitational collapse in an expanding universe.” In: 281 (1984), pp. 1–8. DOI: 10.1086/162070.
- [239] E. Bertschinger. “Self - similar secondary infall and accretion in an Einstein-de Sitter universe.” In: *Astrophys. J. Suppl.* 58 (1985), p. 39. DOI: 10.1086/191028.
- [240] Yoram Lithwick and Neal Dalal. “Self-Similar Solutions of Triaxial Dark Matter Halos.” In: *Astrophys. J.* 734 (2011), p. 100. DOI: 10.1088/0004-637X/734/2/100. arXiv: 1010.3723 [astro-ph.CO].
- [241] Xun Shi. “The outer profile of dark matter haloes: an analytical approach.” In: *Mon. Not. Roy. Astron. Soc.* 459.4 (2016), pp. 3711–3720. DOI: 10.1093/mnras/stw925. arXiv: 1603.01742 [astro-ph.CO].

- [242] Nick Kaiser and Gordon Squires. "Mapping the dark matter with weak gravitational lensing." In: *Astrophys. J.* 404 (1993), pp. 441–450. DOI: [10.1086/172297](https://doi.org/10.1086/172297).
- [243] Keiichi Umetsu, Tom Broadhurst, Adi Zitrin, Elinor Medezinski, Dan Coe, and Marc Postman. "A Precise Cluster Mass Profile Averaged from the Highest-Quality Lensing Data." In: *Astrophys. J.* 738 (2011), p. 41. DOI: [10.1088/0004-637X/738/1/41](https://doi.org/10.1088/0004-637X/738/1/41). arXiv: [1105.0444](https://arxiv.org/abs/1105.0444) [astro-ph.CO].
- [244] Keiichi Umetsu and Benedikt Diemer. "Lensing Constraints on the Mass Profile Shape and the Splashback Radius of Galaxy Clusters." In: *Astrophys. J.* 836.2 (2017), p. 231. DOI: [10.3847/1538-4357/aa5c90](https://doi.org/10.3847/1538-4357/aa5c90). arXiv: [1611.09366](https://arxiv.org/abs/1611.09366) [astro-ph.CO].
- [245] O. Contigiani, H. Hoekstra, and Y. M. Bahé. "Weak lensing constraints on splashback around massive clusters." In: (2018). arXiv: [1809.10045](https://arxiv.org/abs/1809.10045) [astro-ph.CO].
- [246] Surhud More et al. "Detection of the Splashback Radius and Halo Assembly bias of Massive Galaxy Clusters." In: *Astrophys. J.* 825.1 (2016), p. 39. DOI: [10.3847/0004-637X/825/1/39](https://doi.org/10.3847/0004-637X/825/1/39). arXiv: [1601.06063](https://arxiv.org/abs/1601.06063) [astro-ph.CO].
- [247] Eric Baxter, Chihway Chang, Bhuvnesh Jain, Susmita Adhikari, Neal Dalal, Andrey Kravtsov, Surhud More, Eduardo Rozo, Eli Rykoff, and Ravi K. Sheth. "The Halo Boundary of Galaxy Clusters in the SDSS." In: *Astrophys. J.* 841.1 (2017), p. 18. DOI: [10.3847/1538-4357/aa6ff0](https://doi.org/10.3847/1538-4357/aa6ff0). arXiv: [1702.01722](https://arxiv.org/abs/1702.01722) [astro-ph.CO].
- [248] Chihway Chang et al. "The Splashback Feature around DES Galaxy Clusters: Galaxy Density and Weak Lensing Profiles." In: *Astrophys. J.* 864.1 (2018), p. 83. DOI: [10.3847/1538-4357/aad5e7](https://doi.org/10.3847/1538-4357/aad5e7). arXiv: [1710.06808](https://arxiv.org/abs/1710.06808) [astro-ph.CO].

- [249] T. Shin et al. "Measurement of the Splashback Feature around SZ-selected Galaxy Clusters with DES, SPT and ACT." In: (2018). arXiv: 1811.06081 [astro-ph.CO].
- [250] 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. arXiv: 1001.4525 [hep-th].
- [251] 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 [astro-ph].
- [252] Sean M. Carroll, Vikram Duvvuri, Mark Trodden, and Michael S. Turner. "Is cosmic speed - up due to new gravitational physics?" In: *Phys. Rev. D70* (2004), p. 043528. doi: 10.1103/PhysRevD.70.043528. arXiv: astro-ph/0306438 [astro-ph].
- [253] J. E. Gunn and J. R. Gott III. "On the Infall of Matter Into Clusters of Galaxies and Some Effects on Their Evolution." In: 176 (Aug. 1972), p. 1. doi: 10.1086/151605.
- [254] H. Mo, F. C. van den Bosch, and S. White. *Galaxy Formation and Evolution*. May 2010.
- [255] Camila A. Correa, J. Stuart B. Wyithe, Joop Schaye, and Alan R. Duffy. "The accretion history of dark matter haloes – II. The connections with the mass power spectrum and the density profile." In: *Mon. Not. Roy. Astron. Soc.* 450.2 (2015), pp. 1521–1537. doi: 10.1093/mnras/stv697. arXiv: 1501.04382 [astro-ph.CO].
- [256] Ciaran A.J. O'Hare and Clare Burrage. "Stellar kinematics from the symmetron fifth force in the Milky Way disk." In: *Phys. Rev. D98.6* (2018), p. 064019. doi: 10.1103/PhysRevD.98.064019. arXiv: 1805.05226 [astro-ph.CO].

- [257] K. Bamba, R. Gannouji, M. Kamijo, S. Nojiri, and M. Sami. “Spontaneous symmetry breaking in cosmos: The hybrid symmetron as a dark energy switching device.” In: *JCAP* 1307 (2013), p. 017. DOI: 10.1088/1475-7516/2013/07/017. arXiv: 1211.2289 [hep-th].
- [258] Anne-Christine Davis, Baojiu Li, David F. Mota, and Hans A. Winther. “Structure Formation in the Symmetron Model.” In: *Astrophys. J.* 748 (2012), p. 61. DOI: 10.1088/0004-637X/748/1/61. arXiv: 1108.3081 [astro-ph.CO].
- [259] Joseph Clampitt, Bhuvnesh Jain, and Justin Khoury. “Halo Scale Predictions of Symmetron Modified Gravity.” In: *JCAP* 1201 (2012), p. 030. DOI: 10.1088/1475-7516/2012/01/030. arXiv: 1110.2177 [astro-ph.CO].
- [260] Philippe Brax, Anne-Christine Davis, Baojiu Li, Hans A. Winther, and Gong-Bo Zhao. “Systematic Simulations of Modified Gravity: Symmetron and Dilaton Models.” In: *JCAP* 1210 (2012), p. 002. DOI: 10.1088/1475-7516/2012/10/002. arXiv: 1206.3568 [astro-ph.CO].
- [261] Claudio Llinares and David F. Mota. “Cosmological simulations of screened modified gravity out of the static approximation: effects on matter distribution.” In: *Phys. Rev. D* 89.8 (2014), p. 084023. DOI: 10.1103/PhysRevD.89.084023. arXiv: 1312.6016 [astro-ph.CO].
- [262] 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. arXiv: 1310.3266 [astro-ph.CO].
- [263] Laura Taddei, Riccardo Catena, and Massimo Pietroni. “Spherical collapse and halo mass function in the symmetron model.” In: *Phys. Rev. D* 89.2 (2014), p. 023523. DOI: 10.1103/PhysRevD.89.023523. arXiv: 1310.6175 [astro-ph.CO].

- [264] Bjoern Malte Schaefer and Kazuya Koyama. “Spherical collapse in modified gravity with the Birkhoff-theorem.” In: *Mon. Not. Roy. Astron. Soc.* 385 (2008), pp. 411–422. DOI: [10.1111/j.1365-2966.2008.12841.x](https://doi.org/10.1111/j.1365-2966.2008.12841.x). arXiv: [0711.3129](https://arxiv.org/abs/0711.3129) [astro-ph].
- [265] Ph. Brax, R. Rosenfeld, and D. A. Steer. “Spherical Collapse in Chameleon Models.” In: *JCAP* 1008 (2010), p. 033. DOI: [10.1088/1475-7516/2010/08/033](https://doi.org/10.1088/1475-7516/2010/08/033). arXiv: [1005.2051](https://arxiv.org/abs/1005.2051) [astro-ph.CO].
- [266] Bin Hu, Xue-Wen Liu, and Rong-Gen Cai. “CHAM: a fast algorithm of modelling non-linear matter power spectrum in the sCreened HAlo Model.” In: *Mon. Not. Roy. Astron. Soc.* 476.1 (2018), pp. L65–L68. DOI: [10.1093/mnrasl/sly032](https://doi.org/10.1093/mnrasl/sly032). arXiv: [1712.09017](https://arxiv.org/abs/1712.09017) [astro-ph.CO].
- [267] Shin’ichi Nojiri, Sergei D. Odintsov, and Valerio Faraoni. “Effects of modified gravity on the turnaround radius in cosmology.” In: *Phys. Rev.* D98.2 (2018), p. 024005. DOI: [10.1103/PhysRevD.98.024005](https://doi.org/10.1103/PhysRevD.98.024005). arXiv: [1806.01966](https://arxiv.org/abs/1806.01966) [gr-qc].
- [268] Rafael C. C. Lopes, Rodrigo Voivodic, Luis Raul Abramo, and Laerte Sodré Jr. “Turnaround radius in $f(R)$ model.” In: *JCAP* 1809.09 (2018), p. 010. DOI: [10.1088/1475-7516/2018/09/010](https://doi.org/10.1088/1475-7516/2018/09/010). arXiv: [1805.09918](https://arxiv.org/abs/1805.09918) [astro-ph.CO].
- [269] Weiguang Cui, Pengjie Zhang, and Xiaohu Yang. “Nonlinearities in modified gravity cosmology I: signatures of modified gravity in the nonlinear matter power spectrum.” In: *Phys. Rev.* D81 (2010), p. 103528. DOI: [10.1103/PhysRevD.81.103528](https://doi.org/10.1103/PhysRevD.81.103528). arXiv: [1001.5184](https://arxiv.org/abs/1001.5184) [astro-ph.CO].
- [270] Baojiu Li, Wojciech A. Hellwing, Kazuya Koyama, Gong-Bo Zhao, Elise Jennings, and Carlton M. Baugh. “The nonlinear matter and velocity power spectra in f(R) gravity.” In: *Mon. Not. Roy. Astron. Soc.* 428 (2013), pp. 743–755. DOI: [10.1093/mnras/sts072](https://doi.org/10.1093/mnras/sts072). arXiv: [1206.4317](https://arxiv.org/abs/1206.4317) [astro-ph.CO].

- [271] Lucas Lombriser, Fabian Schmidt, Tobias Baldauf, Rachel Mandelbaum, Uros Seljak, and Robert E. Smith. “Cluster Density Profiles as a Test of Modified Gravity.” In: *Phys. Rev.* D85 (2012), p. 102001. doi: 10.1103/PhysRevD.85.102001. arXiv: 1111.2020 [astro-ph.CO].
- [272] Tsz Yan Lam, Takahiro Nishimichi, Fabian Schmidt, and Masahiro Takada. “Testing Gravity with the Stacked Phase Space around Galaxy Clusters.” In: *Phys. Rev. Lett.* 109 (2012), p. 051301. doi: 10.1103/PhysRevLett.109.051301. arXiv: 1202.4501 [astro-ph.CO].
- [273] Ying Zu, D. H. Weinberg, Elise Jennings, Baojiu Li, and Mark Wyman. “Galaxy Infall Kinematics as a Test of Modified Gravity.” In: *Mon. Not. Roy. Astron. Soc.* 445.2 (2014), pp. 1885–1897. doi: 10.1093/mnras/stu1739. arXiv: 1310.6768 [astro-ph.CO].
- [274] Susmita Adhikari, Jeremy Sakstein, Bhuvnesh Jain, Neal Dalal, and Baojiu Li. “Splashback in galaxy clusters as a probe of cosmic expansion and gravity.” In: *JCAP* 1811.11 (2018), p. 033. doi: 10.1088/1475-7516/2018/11/033. arXiv: 1806.04302 [astro-ph.CO].
- [275] Amir Hammami and David F. Mota. “Probing modified gravity via the mass-temperature relation of galaxy clusters.” In: *Astron. Astrophys.* 598 (2017), A132. doi: 10.1051/0004-6361/201629003. arXiv: 1603.08662 [astro-ph.CO].
- [276] Max Gronke, David F. Mota, and Hans A. Winther. “Universal predictions of screened modified gravity on cluster scales.” In: *Astron. Astrophys.* 583 (2015), A123. doi: 10.1051/0004-6361/201526611. arXiv: 1505.07129 [astro-ph.CO].
- [277] Clare Burrage, Andrew Kuribayashi-Coleman, James Stevenson, and Ben Thrussell. “Constraining symmetron fields with atom interferometry.” In: *JCAP* 1612 (2016), p. 041. doi: 10.1088/1475-7516/2016/12/041. arXiv: 1609.09275 [astro-ph.CO].

- [278] Philippe Brax, Anne-Christine Davis, Benjamin Elder, and Leong Khim Wong. “Constraining screened fifth forces with the electron magnetic moment.” In: *Phys. Rev.* D97.8 (2018), p. 084050. DOI: 10.1103/PhysRevD.97.084050. arXiv: 1802.05545 [hep-ph].
- [279] Bhuvnesh Jain, Vinu Vikram, and Jeremy Sakstein. “Astrophysical Tests of Modified Gravity: Constraints from Distance Indicators in the Nearby Universe.” In: *Astrophys. J.* 779 (2013), p. 39. DOI: 10.1088/0004-637X/779/1/39. arXiv: 1204.6044 [astro-ph.CO].
- [280] Philippe Brax, Anne-Christine Davis, and Jeremy Sakstein. “Pulsar Constraints on Screened Modified Gravity.” In: *Class. Quant. Grav.* 31 (2014), p. 225001. DOI: 10.1088/0264-9381/31/22/225001. arXiv: 1301.5587 [gr-qc].
- [281] Claudio Llinares. “Testing modified gravity with globular clusters: the case of NGC 2419.” In: *Mon. Not. Roy. Astron. Soc.* 476.1 (2018), pp. L29–L33. DOI: 10.1093/mnrasl/sly021. arXiv: 1802.02001 [astro-ph.CO].
- [282] Harry Desmond, Pedro G. Ferreira, Guilhem Lavauz, and Jens Jasche. “The Fifth Force in the Local Cosmic Web.” In: (2018). DOI: 10.1093/mnrasl/sly221. arXiv: 1802.07206 [astro-ph.CO].