

ANDRZEJ KRASIŃSKI  
LIST OF ALL PUBLICATIONS  
(where no names are listed, A. K. is the sole author)

## 1 Textbooks and Monographs

- [1] 1. Inhomogeneous cosmological models [a monograph]. Cambridge University Press, Cambridge 1997, 317 pp, ISBN 0 521 48180 5. Paperback re-edition 2006; electronic re-edition 2010.
- [2] 2. Jerzy Plebański and A. Krasinski, An introduction to general relativity and cosmology [a textbook]. Cambridge University Press 2006, 534 pp, ISBN 0-521-85623-X. Paperback re-edition 2012.

The list of corrections to errors and typos found (by Mr. Przemysław Jacewicz) after publication of the book is available from the web page:

[http://www.cambridge.org/gb/knowledge/isbn/item1173175/?site\\_locale=en\\_GB](http://www.cambridge.org/gb/knowledge/isbn/item1173175/?site_locale=en_GB)  
(click on “Resources” and then on “New errata”)

- [3] 3. Krzysztof Bolejko, A. Krasinski, Charles Hellaby and Marie-Noëlle Célérier, Structures in the Universe by exact methods – formation, evolution, interactions [a monograph]. Cambridge University Press 2010, 242 pp, ISBN 978-0-521-76914-3.
- [4] 4. Jerzy Plebański and A. Krasinski, An introduction to general relativity and cosmology, second edition. Cambridge University Press, in the publication pipeline.

## 2 Other books

- [5] 1. A. Krasinski, George F. R. Ellis, Malcolm A. H. MacCallum (editors). Golden Oldies in general relativity. Hidden gems. Springer, Heidelberg 2013, 493 pp, ISBN 978-3-642-34504-3.

## 3 Main research papers

- [6] 1. Solutions of the Einstein field equations for a rotating perfect fluid, Part 1 - Presentation of the flow-stationary and vortex- homogeneous solutions. *Acta Phys. Polon.* **B5**, 411 (1974).

- [7] 2. Solutions of the Einstein field equations for a rotating perfect fluid, Part 2 - Properties of the flow-stationary and vortex- homogeneous solutions. *Acta Phys. Polon.* **B6**, 223 (1975).
- [8] 3. Solutions of the Einstein field equations for a rotating perfect fluid, part 3 - A survey of models of a rotating perfect fluid or dust. *Acta Phys. Polon.* **B6**, 239 (1975), also published in a largely expanded form as a preprint.
- [9] 4. Some solutions of the Einstein field equations for a rotating perfect fluid distribution. *J. Math. Phys.* **16**, 125 (1975).
- [10] 5. All flow-stationary cylindrically symmetric solutions of the Einstein field equations for a rotating isentropic perfect fluid. *Rep. Math. Phys.* **14**, 225 (1978).
- [11] 6. Ellipsoidal spacetimes, sources for the Kerr metric. *Ann. Phys.* **112**, 22 (1978).
- [12] 7. A. Krasinski, Jerzy Plebański, N-dimensional complex Riemann-Einstein spaces with  $O(n-1, C)$  as the symmetry group. *Rep. Math. Phys.* **17**, 217 (1980).
- [13] 8. A Newtonian model of the source of the Kerr metric. *Phys. Lett.* **A80**, 238 (1980).
- [14] 9. A. Krasinski, Marek Perkowski, ORTOCARTAN - a new computer program for analytic calculations in general relativity. *Gen. Relativ. Gravit.* **13**, 67 (1981).
- [15] 10. A. Krasinski, Marek Perkowski, ORTOCARTAN - a new computer program for algebraic calculations. *Computer Phys. Commun.* **22**, 269 (1981).
- [16] 11. Spacetimes with spherically symmetric hypersurfaces. *Gen. Relativ. Gravit.* **13**, 1021 (1981).
- [17] 12. On the global geometry of the Stephani Universe. *Gen. Relativ. Gravit.* **15**, 673 (1983).
- [18] 13. ORTOCARTAN - a program for algebraic calculations in general relativity. *SIGSAM Bulletin* **17** no 3 - 4, 12 (1983).
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- [20] 15. On the equations of state and on flow of perfect fluids in general relativity (comments to two papers by V. I. Obozov). *Acta Phys. Polon.* **B19**, 801 (1988).
- [21] 16. Shearfree normal cosmological models. *J. Math. Phys.* **30**, 433 (1989).
- [22] 17. A note on the uniqueness of the Wyman solution. *Rep. Math. Phys.*, **29**, 337 (1991).

- [23] 18. The program ORTOCARTAN for algebraic calculations in relativity. *Gen. Relativ. Gravit.* **25**, 165 (1993).
- [24] 19. Bibliography on inhomogeneous cosmological models. *Acta Cosmologica* **20**, 67 (1994).
- [25] 20. A. Krasinski, Hernando Quevedo and Roberto Sussman, On the thermodynamical interpretation of perfect fluid solutions of the Einstein equations with no symmetry. *J. Math. Phys.* **38**, 2602 (1997).
- [26] 21. Rotating dust solutions of Einstein's equations with 3-dimensional symmetry groups; Part 1: Two Killing fields spanned on  $u^\alpha$  and  $w^\alpha$ . *J. Math. Phys.* **39**, 380 (1998).
- [27] 22. Rotating dust solutions of Einstein's equations with 3-dimensional symmetry groups; Part 2: One Killing field spanned on  $u^\alpha$  and  $w^\alpha$ . *J. Math. Phys.* **39**, 401 (1998).
- [28] 23. Rotating dust solutions of Einstein's equations with 3-dimensional symmetry groups; Part 3: All Killing fields linearly independent of  $u^\alpha$  and  $w^\alpha$ . *J. Math. Phys.* **39**, 2148 (1998).
- [29] 24. The newest release of the Ortocartan set of programs for algebraic calculations in relativity. *Gen. Relativ. Gravit.* **33**, 145 (2001).
- [30] 25. Rotating Bianchi type V dust models generalizing the  $k = -1$  Friedmann models. *J. Math. Phys.* **42**, 355 (2001).
- [31] 26. Friedmann limits of hypersurface-homogeneous rotating dust models. *J. Math. Phys.* **42**, 3628 (2001).
- [32] 27. A. Krasinski and Charles Hellaby, Structure formation in the Lemaitre – Tolman model. *Phys. Rev.* **D65**, 023501 (2002).
- [33] 28. Charles Hellaby and A. Krasinski, You cannot get through Szekeres wormholes: Regularity, topology and causality in quasi-spherical Szekeres models. *Phys. Rev.* **D66**, 084011 (2002).
- [34] 29. A. Krasinski and Charles Hellaby, More examples of structure formation in the Lemaitre – Tolman model. *Phys. Rev.* **D69**, 023502 (2004).
- [35] 30. A. Krasinski and Charles Hellaby, Formation of a galaxy with a central black hole in the Lemaitre – Tolman model. *Phys. Rev.* **D69**, 043502 (2004).
- [36] 31. Krzysztof Bolejko, A. Krasinski and Charles Hellaby, Formation of voids in the Universe within the Lemaitre–Tolman model. *Mon. Not. Roy. Astr. Soc.* **362**, 213 (2005).

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- [38] 33. A. Krasinski and Krzysztof Bolejko, Avoidance of singularities in spherically symmetric charged dust. *Phys. Rev.* **D73**, 124033 (2006) + erratum *Phys. Rev.* **D75**, 069904 (2007). Fully corrected text available from gr-qc 0602090.
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- [46] 41. Repeatable light paths in the shearfree normal cosmological models. *Phys. Rev.* **D84**, 023510 (2011).
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- [49] 44. A. Krasinski and Gabriel Giono, The charged dust solution of Ruban – matching to Reissner–Nordström and shell crossings. *Gen. Relativ. Gravit.* **44**, 239–251 (2012).
- [50] 45. A. Krasinski and Krzysztof Bolejko, Apparent horizons in the quasi-spherical Szekeres models. *Phys. Rev.* **D85**, 124016 (2012).

- [51] 46. Repeatable light paths in the conformally flat cosmological models. *Phys. Rev.* **D86**, 064001 (2012).
- [52] 47. A. Krasinski and Krzysztof Bolejko, Geometry of the quasi-hyperbolic Szekeres models. *Phys. Rev.* **D86** 104036 (2012).
- [53] 48. Accelerating expansion or inhomogeneity? A comparison of the  $\Lambda$ CDM and Lemaître – Tolman models. *Phys. Rev.* **D89**, 023520 (2014); erratum: *Phys. Rev.* **D89**, 089901(E) (2014).
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- [55] 50. Mimicking acceleration in the constant-bang-time Lemaître – Tolman model: Shell crossings, density distributions and light cones. *Phys. Rev.* **D90**, 064021 (2014).
- [56] 51. Blueshifts in the Lemaître – Tolman models. *Phys. Rev.* **D90**, 103525 (2014).
- [57] 52. Cosmological blueshifting may explain the gamma ray bursts. *Phys. Rev.* **D93**, 043525 (2016).
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- [59] 54. Properties of blueshifted light rays in quasi-spherical Szekeres metrics. *Phys. Rev.* **D97**, 064047 (2018).
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- [61] 56. Gamma radiation from areal radius minima in a quasi-spherical Szekeres metric. *Acta Phys. Polon.* **B51**, 483 (2020).
- [62] 57. Expansion of bundles of light rays in the Lemaître – Tolman models. *Rep. Math. Phys.* **88**, 203 (2021).
- [63] 58. Spacetimes with no position drift. *Acta Phys. Polon.* **B54**, 2-A.1 (2023).

## 4 Research work published in refereed proceedings of international conferences

- [64] 1. The Universe with time-varying spatial curvature index. In: *The birth of the Universe*. Edited by J. Audouze and J. Tran Thanh Van. Proceedings of the 17-th Rencontre de Moriond 1982, vol. 34. Editions Frontieres, Gif sur Yvette 1982, p. 15.

- [65] 2. A generalization of the Lemaître models. In: *The Big Bang and Georges Lemaître*. Edited by A. Berger. D. Reidel Publishing Company, Dordrecht 1984, p. 63.
- [66] 3. Generalized cosmological models. In: *Proceedings of the Sir Arthur Eddington Centenary Symposium, Vol. I: Relativistic astrophysics and cosmology*. Edited by V. de Sabbata and T. M. Karade. World Scientific Publishing Company, Singapore 1984, p. 45.
- [67] 4. The program ORTOCARTAN for applications in Einstein's relativity theory. In: *EUROCAL'85, European Conference on Computer Algebra, Linz, Austria, 1985. Proceedings, vol. 2: Research contributions*. Edited by B. F. Caviness. Lecture Notes in Computer Science vol. 204. Springer, Berlin 1985, p. 159.
- [68] 5. A spatially periodic generalization of the FLRW cosmological models. In: *Proceedings of the 4th Marcel Grossman Meeting on General Relativity*. Edited by R. Ruffini. Elsevier Science Publishers B. V., Amsterdam 1986, p. 989.
- [69] 6. Inhomogeneous generalizations of the Robertson-Walker cosmological models. In: *Gravitational Collapse and Relativity, Proceedings of Yamada Conference XIV*. Edited by H. Sato and T. Nakamura. World Scientific Publishing Company, Singapore 1986, p. 500.
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- [71] 8. Early inhomogeneous cosmological models in Einstein's theory. In: *Modern Cosmology in Retrospect*. Edited by B. Bertotti, R. Balbinot, S. Bergia and A. Messina. Cambridge University Press, Cambridge 1990, p. 115.
- [72] 9. User-friendly features of ORTOCARTAN. In: *Computer Algebra in Physical Research*. Edited by D. V. Shirkov, V. A. Rostovtsev and V. P. Gerdt. World Scientific, Singapore 1991, p. 66.
- [73] 10. A survey of cosmological exact solutions. In: *Proceedings of the 6th Marcel Grossman Meeting on General Relativity*. Edited by H. Sato and T. Nakamura. World Scientific, Singapore 1992, p. 642.
- [74] 11. Physics in an inhomogeneous Universe. In: *Inhomogeneous cosmological models. Proceedings of the 1994 Spanish Relativity Meeting*. Edited by J. M. M. Senovilla and A. Molina. World Scientific, Singapore, 1995, p. 27.
- [75] 12. Overview of inhomogeneous cosmological models. In: *Recent developments in gravitation and mathematical physics*. Edited by A. Macias, T. Matos, O. Obregon and H. Quevedo. World Scientific, Singapore 1996, p. 163.

- [76] 13. Physics and cosmology in an inhomogeneous Universe. In: *Black holes and high energy astrophysics. Proceedings of the 49th Yamada Conference*. Edited by H. Sato and N. Sugiyama. Universal Academy Press, Tokyo 1998, p. 133.
- [77] 14. The ultimate extension of the Bianchi classification for rotating dust models. In: *On Einstein's path: Essays in honor of Engelbert Schucking*. Edited by A. Harvey. Springer, New York 1999, p. 283.
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- [79] 16. Inhomogeneous cosmology – workshop report (Edited by A. Krasinski). In: *The Ninth Marcel Grossman Meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation and Relativistic Field Theories*. Edited by V. G. Gurzadyan, R. T. Jantzen and R. Ruffini. World Scientific, New Jersey, London, Singapore, Hong Kong 2002, p. 627.
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- [82] 19. Charles Hellaby and A. Krasinski, Szekeres models and their wormholes. In: *The Tenth Marcel Grossman Meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation and Relativistic Field Theories*. Edited by M. Novello, S. P. Bergliaffa and R. Ruffini. World Scientific, New Jersey, London, Singapore, Beijing, Shanghai, Hong Kong, Taipei, Chennai 2005, p. 29.
- [83] 20. A. Krasinski and Charles Hellaby, Structure formation in the Universe by exact methods. In: *The Tenth Marcel Grossman Meeting on Recent Developments in Theoretical and Experimental General Relativity, Gravitation and Relativistic Field Theories*. Edited by M. Novello, S. P. Bergliaffa and R. Ruffini. World Scientific, New Jersey, London, Singapore, Beijing, Shanghai, Hong Kong, Taipei, Chennai 2005, p. 80.
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*physics, general relativity and cosmology, in honor of Jerzy Plebański*. Proceedings of 2002 international conference. Edited by H. Garcia-Compean, B. Mielnik, M. Montesinos and M. Przanowski. World Scientific, New Jersey, London, Singapore, Beijing, Shanghai, Hong Kong, Taipei, Chennai 2006, p. 279.

- [85] 22. A. Kasiński and Krzysztof Bolejko, Nonsingular collapse of spherically symmetric charged dust. In: *Proceedings of 11th Marcel Grossman Meeting*. Edited by H. Kleinert, R.T. Jantzen and R. Ruffini, World Scientific, Singapore, 2008, p. 700.
- [86] 23. A. Kasiński and Krzysztof Bolejko, Exact inhomogeneous models and the drift of light rays induced by nonsymmetric flow of the cosmic medium. In: *Proceedings of 13th Marcel Grossman Meeting*. Edited by R. T. Jantzen, K. Rosquist and R. Ruffini, World Scientific, New Jersey, London, Singapore, Beijing, Shanghai, Hong Kong, Taipei, Chennai 2015, p. 922. Also published in *International Journal of Modern Physics D22*, 1330013 (2013).
- [87] 24. Singularities you might not be familiar with (i.e. strange kinds of Big Bang). In: *“Singularities of general relativity and their quantum fate”*. Proceedings of the conference held in Warsaw, 2016. Published in the web page [http://bcc.impan.pl/16SingGR/uploads/Singularity/Andrzej\\_Krasinski.pdf](http://bcc.impan.pl/16SingGR/uploads/Singularity/Andrzej_Krasinski.pdf), and also accessible as a You Tube recording at <https://www.youtube.com/watch?v=0KE1NKMcqB8>

## **5 Communications printed in conference volumes (Note: short conference abstracts are not included in this list at all)**

- [88] 1. A class of rotating and expanding Universes. In: *8th International Conference on General Relativity and Gravitation*. University of Waterloo 1977, p. 216.
- [89] 2. Ellipsoidal spacetimes. In: *8th International Conference on General Relativity and Gravitation*. University of Waterloo 1977, p. 217.
- [90] 3. A. Kasiński and Marek Perkowski, ORTOCARTAN - a computer program for calculating curvature tensors. In: *9th International Conference on General Relativity and Gravitation*. University of Jena 1980, p. 106.
- [91] 4. Spacetimes with intrinsic spherical symmetry. In: *9th International Conference on General Relativity and Gravitation*. University of Jena 1980, p. 44.
- [92] 5. A Newtonian model of the Kerr gravitational field. In: *9th International Conference on General Relativity and Gravitation*. University of Jena 1980, p. 46.



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- [95] 8. The Universe with varying topology of spatial slices. In: *10th International Conference on General Relativity and Gravitation*. University of Padua 1983, p. 841.
- [96] 9. The program ORTOCARTAN - developments since 1983. In: *11th International Conference on General Relativity and Gravitation*. University of Stockholm 1986, p. 58.
- [97] 10. Spacetimes with conformally flat flow-orthogonal sections. In: *11th International Conference on General Relativity and Gravitation*. University of Stockholm 1986, p. 327.
- [98] 11. A unified representation of the shearfree normal models. In: *12th International Conference on General Relativity and Gravitation*. University of Colorado at Boulder 1989, p. 341.
- [99] 12. Cosmological exact solutions. In: *12th International Conference on General Relativity and Gravitation*. University of Colorado at Boulder 1989, p. 340.
- [100] 13. The program ORTOCARTAN - now available on Atari. In: *13th International Conference on General Relativity and Gravitation*. University of Cordoba 1992, p. 305.
- [101] 14. Cosmology in an inhomogeneous Universe. In: *13th International Conference on General Relativity and Gravitation*. University of Cordoba 1992, p. 378.

## **6 Technical reports (distributed as preprints or electronic recordings; not otherwise published)**

- [102] 1. A. Krasinski, Marek Perkowski and Zdzisław Otwinowski, The system ORTOCARTAN for analytic calculations. Detailed description. Preprint (1979), documentation to the program.
- [103] 2. A. Krasinski and Marek Perkowski, The system ORTOCARTAN - user's manual. Preprint (1st issue 1979, 2nd issue 1980), documentation to the program.
- [104] 3. A. Krasinski and Marek Perkowski, The system ORTOCARTAN - user's manual. Third edition, Cologne 1983. Updated documentation to the program, stored and distributed on a magnetic tape.

- [105] 4. A. Kasiński, Marek Perkowski, Zdzisław Otwinowski and Marek Kwaśniewski, The system ORTOCARTAN for analytic calculations. Detailed description. Second edition, Warsaw 1984. Updated documentation to the program, stored and distributed on a magnetic tape.
- [106] 5. The system ORTOCARTAN - user's manual. Supplement to the second edition. Preprint (1984), documentation to the program (included in later updates).
- [107] 6. A. Kasiński and Marek Perkowski, The system ORTOCARTAN - user's manual. Fourth edition, Warsaw 1992. Revised and extended documentation to the program, stored and distributed on diskettes.
- [108] 7. A. Kasiński and Marek Perkowski, The system ORTOCARTAN - user's manual. Fifth edition, Warsaw 2000. Revised and extended documentation to the program, stored on disk, distributed by email only.

## **7 Notes of lecture courses given at research schools (those given in Poland are marked with PPP)**

- [109] 1. A survey of cosmological models. *Acta Cosmologica* **7**, 101 (1978). (PPP)
- [110] 2. Rotational motion of matter in general relativity. *Acta Cosmologica* **7**, 119 (1978). (PPP)
- [111] 3. Cylindrical rotating Universe. *Acta Cosmologica* **7**, 133 (1978). (PPP)
- [112] 4. Symmetries of manifolds and tensor fields and the Bianchi classification. In: *Proceedings of the Instructional Workshop on Advanced Aspects of General Relativity, vol. I*. Edited by A. Banerjee. Jadavpur University and the Indian Association for the Cultivation of Science, Calcutta 1989, p. 6.

## **8 Semi-popular texts for physicists + review papers (all in Polish)**

- [113] 1. Models of the Universe in general relativity. *Postępy Astronomii* **23**, 97 (1975).
- [114] 2. Is the Sun spherical? *Postępy Astronomii* **23**, 159 (1975).
- [115] 3. A. Kasiński and Marek Perkowski, Symbolic algebraic computer programs, Part 1 - The LISP programming language. *Postępy Astronomii* **25**, 203 (1977).

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- [119] 7. Figures of equilibrium, Part 3 - Inhomogeneous figures. *Postępy Astronomii* **29**, 87 (1981).
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- [121] 9. The Galileo affair. *Postępy Fizyki* **44**, 487 (1993); same text: *Postępy Astronomii* **41**, 109 (1993) - part 1, **41**, 183 (1993) - part 2.
- [122] 10. What is space and what space do we live in? (the point of view of a nonquantum physicist). In: *Space in Contemporary Science*. Edited by S. Symotiuk and G. Nowak. Publishing House of the Maria Curie-Skłodowska University, Lublin 2000, p. 11.
- [123] 11. How the theory of relativity had been taking shape. *Postępy Fizyki* **54**, 95 (2003).
- [124] 12. Un-recognised discoveries. Unknown episodes of the history of general relativity. *Postępy Fizyki* **58**, 104 (2007).
- [125] 13. On cosmological models and some misunderstandings about them. *Postępy Fizyki* **60**, 98 (2009).
- [126] 14. On Charles Babbage’s difference engine and other old computers. *Postępy Fizyki* **61**, 229 (2010).
- [127] 15. Premature Nobel Prize decision? (includes a translation of a letter by Yousaf M. Butt from *Physics Today* **65**, February 2012, p. 10). *Postępy Fizyki* **63**, 50 (2012).
- [128] 16. 100 years of general relativity. *Nauka* quarterly, No 1/2016, 11 (2016).

## 9 Short notes correcting errors in published papers by other authors

- [129] 1. Comment on “Space-times with plane-symmetric scalar waves” [J. Math. Phys. 33, 3506 (1992)], *J. Math. Phys.* **35**, 527 (1994).
- [130] 2. Stationary cylindrically symmetric vacuum solutions with  $\Lambda$  [Comment on the paper by Santos, CQG **10**, 2401 (1993)], *Class. Quant. Grav.* **11**, 1373 (1994).
- [131] 3. Comment on “A cylindrically symmetric solution approaching Einstein universe” [by M. Iftime, CQG **19**, L81 (2002)], *Class. Quant. Grav.*, **19**, 5273 (2002).

## 10 Editorial notes about classic papers on relativity

- [132] 1. [The Lanczos 1924 paper on rotating dust] *Gen. Relativ. Gravit.* **29**, 359 (1997).
- [133] 2. [The Lemaitre 1933 paper on his inhomogeneous cosmological model] *Gen. Relativ. Gravit.* **29**, 637 (1997).
- [134] 3. [The Tolman 1934 paper on the Lemaitre model] *Gen. Relativ. Gravit.* **29**, 931 (1997).
- [135] 4. [The Sen 1934 paper on the Lemaitre-Tolman model] *Gen. Relativ. Gravit.* **29**, 1473 (1997).
- [136] 5. [The McCrea 1939 paper on observations in inhomogeneous models] *Gen. Relativ. Gravit.* **30**, 311 (1998).
- [137] 6. [The Kustaanheimo-Qvist 1948 paper on spherically symmetric shearfree solutions] *Gen. Relativ. Gravit.* **30**, 659 (1998).
- [138] 7. [The Bonnor 1956 paper on the formation of “nebulae”] *Gen. Relativ. Gravit.* **30**, 1111 (1998).
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- [141] 10. [The Vaidya papers on his radiating metric] *Gen. Relativ. Gravit.* **31**, 115 (1999).
- [142] 11. [The Nariai papers on his special spherical solution] *Gen. Relativ. Gravit.* **31**, 945 (1999).
- [143] 12. [The Datt paper on the inhomogeneous generalization of the Kantowski-Sachs models] *Gen. Relativ. Gravit.* **31**, 1615 (1999).
- [144] 13. [The Bondi paper on the Lemaitre-Tolman model] *Gen. Relativ. Gravit.* **31**, 1777 (1999).
- [145] 14. A. Krasinski and George F. R. Ellis, [The classic Friedmann papers] *Gen. Relativ. Gravit.* **31**, 1985 (1999).
- [146] 15. [The Milne-McCrea papers on Newtonian cosmology] *Gen. Relativ. Gravit.* **32**, 1933 (2000).

- [147] 16. [The Ruban papers on properties of the Datt solution] *Gen. Relativ. Gravit.* **33**, 363 (2001).
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