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Bibliography

- [1] William Thomson. 4. *On Vortex Atoms*. **Proceedings of the Royal Society of Edinburgh** 6. **1869** (1).
- [2] Ludvig Faddeev, Antti J Niemi, et al. *Stable knot-like structures in classical field-theory*. **Nature** 387 6628. **1997** (1).
- [3] Edward Witten. *Quantum field theory and the Jones polynomial*. **Communications in Mathematical Physics** 121 3. **1989** (1).
- [4] Ivan I Smalyukh, Yves Lansac, Noel A Clark, and Rahul P Trivedi. *Three-dimensional structure and multistable optical switching of triple-twisted particle-like excitations in anisotropic fluids*. **Nature materials** 9 2. **2010** (1).
- [5] Uroš Tkalec, Miha Ravnik, Simon Čopar, Slobodan Žumer, and Igor Mušević. *Reconfigurable knots and links in chiral nematic colloids*. **Science** 333 6038. **2011** (1).
- [6] Ying Ran, Pavan Hosur, and Ashvin Vishwanath. *Fermionic Hopf solitons and Berry's phase in topological surface superconductors*. **Physical Review B** 84 18. **2011** (1, 69).
- [7] G. E. Volovik and V. P. Mineev. *Particle-like solitons in superfluid He phases*. **Soviet Journal of Experimental and Theoretical Physics** 46 2. **1977** (1, 47, 69).
- [8] Yuki Kawaguchi, Muneto Nitta, and Masahito Ueda. *Knots in a Spinor Bose-Einstein Condensate*. **Physical Review Letters** 100 18. **2008** (1, 47, 69).
- [9] David S Hall, Michael W Ray, Konstantin Tiurev, Emmi Ruokokoski, Andrei Horia Gheorghe, and Mikko Möttönen. *Tying quantum knots*. **Nature Physics**. **2016** (1, 47, 69).
- [10] Michael I Monastyrsky. *Topology in molecular biology*. **2007** (1, 69).
- [11] L Woltjer. *A theorem on force-free magnetic fields*. **Proc. Natl. Acad. Sci.** 44 6. **1958** (1, 11, 27, 48).
- [12] HK Moffatt. *The degree of knottedness of tangled vortex lines*. **J. Fluid Mech** 35. **1969** (1, 4, 14, 27, 48, 69, 73).
- [13] M Steenbeck, F Krause, and K-H Rädler. *Berechnung der mittleren Lorentz-Feldstärke für ein elektrisch leitendes Medium in turbulenter, durch Coriolis-Kräfte beeinflusster Bewegung*. **Zeitschrift für Naturforschung A** 21 4. **1966** (1).

- [14] Mitchell A. Berger. *Introduction to magnetic helicity*. **Plasma Physics and Controlled Fusion** 41 12B. **1999** (1, 14, 27, 72).
- [15] Vladimir I Arnold. “The asymptotic Hopf invariant and its applications”. In: *Vladimir I. Arnold-Collected Works*. Springer, 1974, 357–375 (1, 14, 15, 47, 48).
- [16] Henry Keith Moffatt. *The energy spectrum of knots and links*. **Nature** 347 6291. **1990** (1).
- [17] A. M. Kamchatnov. *Topological solitons in magnetohydrodynamics*. **Soviet Journal of Experimental and Theoretical Physics** 82. **1982** (1, 23, 27, 31, 33, 47, 49, 51, 64, 69, 70).
- [18] R. Z. Sagdeev, Moiseev S. S., A. V. Tur, and V. V. Yanovskii. “Problems of the Theory of Strong Turbulence and Topological Solitons”. In: *Nonlinear phenomena in plasma physics and hydrodynamics*. Vol. 1. Moscow: Mir Publishers, 1986 (2, 31, 47, 49).
- [19] Antonio F. Rañada. *A topological theory of the electromagnetic field*. **Letters in Mathematical Physics** 18 2. **1989** (2, 31, 47, 49, 69, 70).
- [20] William T. M. Irvine and Dirk Bouwmeester. *Linked and knotted beams of light*. **Nature Physics** 4 9. **2008** (2, 47, 69).
- [21] Manuel Arrayás and José L Trueba. *A class of non-null toroidal electromagnetic fields and its relation to the model of electromagnetic knots*. **Journal of Physics A: Mathematical and Theoretical** 48 2. **2014** (2, 21, 31, 49, 89).
- [22] Hridesh Kedia, Iwo Bialynicki-Birula, Daniel Peralta-Salas, and William M. T. Irvine. *Tying knots in light fields*. **Physical Review Letters** 111 15. **2013** (2, 69, 70, 72).
- [23] Amy Thompson, Joe Swearingin, Alexander Wickes, and Dirk Bouwmeester. *Constructing a class of topological solitons in magnetohydrodynamics*. **Physical Review E** 89 4. **2014** (2, 69, 70, 72, 75).
- [24] Hridesh Kedia, David Foster, Mark R Dennis, and William TM Irvine. *Weaving knotted vector fields with tunable helicity*. **Physical Review Letters** 117 27. **2016** (2).
- [25] Simon Candelaresi and Axel Brandenburg. *Decay of helical and nonhelical magnetic knots*. **Physical Review E** 84 1. **2011** (2, 27, 90).
- [26] Jonathan Braithwaite. *Magnetohydrodynamic relaxation of AGN ejecta: radio bubbles in the intracluster medium*. **Monthly Notices of the Royal Astronomical Society** 406 2. **2010** (2, 27, 48, 64, 89).
- [27] HY Guo, MW Binderbauer, D Barnes, S Putvinski, N Rostoker, L Sevier, M Tuszewski, MG Anderson, R Andow, L Bonelli, et al. *Formation of a long-lived hot field reversed configuration by dynamically merging two colliding high- β compact toroids*. **Physics of Plasmas (1994-present)** 18 5. **2011** (2, 89).
- [28] Anatoly Alexandrovich Vlasov. *On vibration properties of electron gas*. **J. Exp. Theor. Phys** 8 3. **1938** (5).
- [29] *Stagger Code*. eprint: <http://comp.astro.ku.dk/Twiki/view/CompAstro/StaggerCode> (10).

- [30] T. D. Arber, A. W. Longbottom, C. L. Gerrard, and A. M. Milne. *Lare3d: Lagrangian-Eulerian remap scheme for MHD*. Astrophysics Source Code Library. 2012. ascl: 1208.015 (10).
- [31] S Fromang, P Hennebelle, and R Teyssier. “RAMSES-MHD: an AMR Godunov code for astrophysical applications”. In: *SF2A-2005: Semaine de l’Astrophysique Francaise*. 2005, 743 (10).
- [32] *The Pencil-Code: a high-order finite-difference code for compressible MHD*. eprint: <http://pencil-code.nordita.org/> (10, 93).
- [33] Dieter Biskamp. *Nonlinear magnetohydrodynamics*. 1. **1997** (12).
- [34] Moritz Epple. *Years ago*. **The Mathematical Intelligencer** 20 1. **1998** (14).
- [35] G Călugăreanu. *Sur les classes d’isotopie des noeuds tridimensionnels et leurs invariants*. **Czechoslovak Mathematical Journal** 11 4. **1961** (15).
- [36] James H White. *Self-linking and the Gauss integral in higher dimensions*. **American Journal of Mathematics** 91 3. **1969** (15).
- [37] Dustin Kleckner and William TM Irvine. *Creation and dynamics of knotted vortices*. **Nature physics** 9 4. **2013** (17).
- [38] Martin W Scheeler, Dustin Kleckner, Davide Proment, Gordon L Kindlmann, and William TM Irvine. *Helicity conservation by flow across scales in reconnecting vortex links and knots*. **Proceedings of the National Academy of Sciences** 111 43. **2014** (17, 73).
- [39] S Chandrasekhar. *On the stability of the simplest solution of the equations of hydromagnetics*. **Proceedings of the National Academy of Sciences** 42 5. **1956** (23, 51, 69).
- [40] Roscoe B. White. *The Theory of Toroidally Confined Plasmas*. **2001** (27).
- [41] Richard D. Hazeltine and James D. Meiss. *Plasma Confinement*. **2003** (27).
- [42] Avery E. Broderick and Ramesh Narayan. *Magnetic helicity and the relaxation of fossil fields*. **Monthly Notices of the Royal Astronomical Society** 383 3. **2008** (27).
- [43] Jonathan Braithwaite. *Axisymmetric magnetic fields in stars: relative strengths of poloidal and toroidal components*. **Monthly Notices of the Royal Astronomical Society** 397 2. **2009** (27).
- [44] Axel Brandenburg. *The critical role of magnetic helicity in astrophysical large-scale dynamos*. **Plasma Physics and Controlled Fusion** 51 12. **2009** (27).
- [45] B. L. Tan and G. L. Huang. *Neoclassical bootstrap current in solar plasma loops*. **Astronomy and Astrophysics** 453 1. **2006** (27).
- [46] B. C. Low. *Coronal mass ejections, magnetic flux ropes, and solar magnetism*. **Journal of Geophysical Research: Space Physics** (1978–2012) 106 A11. **2001** (27).
- [47] T R Jarboe. *Review of spheromak research*. **Plasma Phys. Control. Fusion** 36 6. **1994** (27).
- [48] M Tuszewski. *Field reversed configurations*. **Nucl. Fusion** 28 11. **1988** (27).

- [49] Pavel Kubes, Marian Paduch, Tadeusz Pisarczyk, Marek Scholz, Daniel Klir, Jozef Kravarik, Karel Rezac, Tomasz Chodukowski, Irena Ivanova-Stanik, Leslaw Karpinski, et al. *Transformation of the Pinched Column at a Period of the Neutron Production*. **Plasma Science, IEEE Transactions on** 38 4. **2010** (27).
- [50] JB Taylor. *Relaxation of toroidal plasma and generation of reverse magnetic fields*. **Phys. Rev. Lett.** 33 19. **1974** (27, 47, 69, 76, 89).
- [51] Jason Cantarella, Dennis DeTurck, and Herman Gluck. *Upper bounds for the writhing of knots and the helicity of vector fields*. **AMS/IP Studies In Advanced Mathematics** 24. **2001** (27).
- [52] SR Hudson, E Startsev, and E Feibush. *A new class of magnetic confinement device in the shape of a knot*. **Physics of Plasmas (1994-present)** 21 1. **2014** (27).
- [53] G. E. Marsh. *Force-free Magnetic fields Solutions, topology and applications*. **1996** (27).
- [54] Amy Thompson, Joe Swearngin, Alexander Wickes, and Dirk Bouwmeester. *Constructing a class of topological solitons in magnetohydrodynamics*. **Physical Review E** 89 4. **2014** (27).
- [55] Fabio Del Sordo, Simon Candelaresi, and Axel Brandenburg. *Magnetic field decay of three interlocked flux rings with zero linking number*. **Physical Review E** 81 3. **2010** (27).
- [56] Y. Ono, M. Inomoto, T. Okazaki, and Y. Ueda. *Experimental investigation of three-component magnetic reconnection by use of merging spheromaks and tokamaks*. **Physics of Plasmas** 4 5. **1997** (27).
- [57] A. Brandenburg and W. Dobler. *Hydromagnetic turbulence in computer simulations*. **Comput. Phys. Commun.** 147 1-2. **2002** (27).
- [58] SR Hudson, RL Dewar, G Dennis, MJ Hole, M McGann, G von Nessi, and S Lazerson. *Computation of multi-region relaxed magnetohydrodynamic equilibria*. **Physics of Plasmas (1994-present)** 19 11. **2012** (29-31, 73, 79).
- [59] Paul M Bellan. *Fundamentals of plasma physics*. **2006** (30, 61).
- [60] Russell M Kulsrud. *Plasma physics for astrophysics*. 77. **2005** (30, 31, 48).
- [61] Richard Fitzpatrick. *Fundamentals of Magnetic Island Theory in Tokamaks*. **Fusion Science and Technology** 59 3. **2011** (30).
- [62] Johan Peter Goedbloed and Stefaan Poedts. *Principles of magnetohydrodynamics: with applications to laboratory and astrophysical plasmas*. **2004** (31, 101).
- [63] Johan P Goedbloed, Rony Keppens, and Stefaan Poedts. *Advanced magnetohydrodynamics: with applications to laboratory and astrophysical plasmas*. **2010** (31, 91).
- [64] M McGann, SR Hudson, RL Dewar, and G Von Nessi. *Hamilton–Jacobi theory for continuation of magnetic field across a toroidal surface supporting a plasma pressure discontinuity*. **Physics Letters A** 374 33. **2010** (31).
- [65] Heinz Hopf. *Über die Abbildungen der dreidimensionalen Sphäre auf die Kugelfläche*. **Math. Ann.** 104 1. **1931** (31, 47, 49, 69, 89).
- [66] AF Rañada and JL Trueba. *Electromagnetic knots*. **Phys. Lett. A** 202 July. **1995** (31).

- [67] H_K_ Moffatt. *Magnetostatic equilibria and analogous Euler flows of arbitrarily complex topology. Part 1. Fundamentals*. **Journal of Fluid Mechanics** 159. **1985** (47).
- [68] A. R. Yeates, G. Hornig, and A. L. Wilmot-Smith. *Topological Constraints on Magnetic Relaxation*. **Phys. Rev. Lett.** 105 8. **2010** (47).
- [69] HK Moffatt. *Magnetic relaxation and the Taylor conjecture*. **Journal of Plasma Physics** 81 06. **2015** (47, 69, 89).
- [70] CB Smiet, S Candelaresi, A Thompson, J Swearngin, JW Dalhuisen, and D Bouwmeester. *Self-organizing knotted magnetic structures in plasma*. **Physical review letters** 115 9. **2015** (47–50, 60, 64, 69, 73, 79, 89).
- [71] Amy Thompson, Alexander Wickes, Joe Swearngin, and Dirk Bouwmeester. *Classification of electromagnetic and gravitational hopfions by algebraic type*. **Journal of Physics A: Mathematical and Theoretical** 48 20. **2015** (47, 69).
- [72] Andrei Gruzinov. *Solitary Magnetic Bubbles*. **arXiv preprint arXiv:1006.1368**. **2010** (48, 60, 63, 64).
- [73] Jonathan Zrake and William E East. *Freely decaying turbulence in force-free electrodynamics*. **The Astrophysical Journal** 817 2. **2016** (48, 60, 63, 64).
- [74] Winston H Bostick. *Experimental study of ionized matter projected across a magnetic field*. **Physical Review** 104 2. **1956** (48, 64, 89).
- [75] WT Armstrong, DC Barnes, R Il Bartsch, RJ Commisso, CA Ekdahl, I Henins, DW Hewett, HW Hoida, and TR Jarboe. “Compact toroid experiments and theory”. In: *Proc. of the Eight International Conference on Plasma Physics and Controlled Nuclear Fusion Research, Brussels*. 1980 (48, 64, 89).
- [76] LJ Perkins, SK Ho, and JH Hammer. *Deep penetration fuelling of reactor-grade tokamak plasmas with accelerated compact toroids*. **Nuclear Fusion** 28 8. **1988** (48, 64, 89).
- [77] BL Wright. *Field reversed configurations and spheromaks*. **Nuclear Fusion** 30 9. **1990** (48, 64, 89).
- [78] Leonard FE Burlaga. “Magnetic clouds”. In: *Physics of the Inner Heliosphere II*. Springer, 1991, 1–22 (48, 89, 99, 112).
- [79] Ashok Kumar and DM Rust. *Interplanetary magnetic clouds, helicity conservation, and current-core flux-rope*s. **Journal of Geophysical Research: Space Physics** 101 A7. **1996** (48, 89, 100).
- [80] KG Ivanov and AF Harshiladze. *Interplanetary hydromagnetic clouds as flare-generated spheromaks*. **Solar physics** 98 2. **1985** (48, 89, 101).
- [81] Alberto Enciso, Daniel Peralta-Salas, and Francisco Torres de Lizaur. *Helicity is the only integral invariant of volume-preserving transformations*. **Proceedings of the National Academy of Sciences** 113 8. **2016** (48).
- [82] H. Alfvén. *On the Existence of Electromagnetic-Hydrodynamic Waves*. **Arkiv for Astronomi** 29. **1943** (48, 97).
- [83] G. K. Batchelor. *On the Spontaneous Magnetic Field in a Conducting Liquid in Turbulent Motion*. **Royal Society of London Proceedings Series A** 201 1066. **1950** (48, 90, 97).

- [84] E. R. Priest and T. G. Forbes. *Magnetic reconnection: MHD theory and applications*. **2000** (48, 97).
- [85] Gunnar Hornig and K Schindler. *Magnetic topology and the problem of its invariant definition*. **Physics of Plasmas (1994-present)** 3 3. **1996** (48, 69, 77).
- [86] W. H. Press, S. A. Teukolsky, W. T. Vetterling, and B. P. Flannery. *Numerical Recipes 3rd Edition: The Art of Scientific Computing*. **2007** (48).
- [87] D. I. Pontin, G. Hornig, A. L. Wilmot-Smith, and I. J. D. Craig. *Lagrangian Relaxation Schemes for Calculating Force-free Magnetic Fields, and Their Limitations*. **ApJ** 700 2. **2009** (48).
- [88] S. Candelaesi, D. Pontin, and G. Hornig. *Mimetic Methods for Lagrangian Relaxation of Magnetic Fields*. **SIAM Journal on Scientific Computing** 36 6. **2014** (48, 54, 55).
- [89] Subrahmanyam Chandrasekhar. *Hydrodynamic and Hydromagnetic Stability*. **1961** (48, 51).
- [90] Roland Chodura and Arnulf Schlüter. *A 3D code for MHD equilibrium and stability*. **Journal of Computational Physics** 41 1. **1981** (54).
- [91] I. J. D. Craig and A. D. Sneyd. *A dynamic relaxation technique for determining the structure and stability of coronal magnetic fields*. **ApJ** 311. **1986** (54).
- [92] S. Candelaesi, D. I. Pontin, and G. Hornig. *Magnetic Field Relaxation and Current Sheets in an Ideal Plasma*. **The Astrophysical Journal** 808, 134. **2015** (54).
- [93] James M Hyman and Mikhail Shashkov. *Natural discretizations for the divergence, gradient, and curl on logically rectangular grids*. **Computers & Mathematics with Applications** 33 4. **1997** (55).
- [94] James M Hyman and Mikhail Shashkov. *Mimetic discretizations for Maxwell's equations*. **Journal of Computational Physics** 151 2. **1999** (55).
- [95] Simon Candelaesi. *GLEMUR*. <https://github.com/SimonCan/glemur>. 2015. URL: <https://github.com/SimonCan/glemur> (55).
- [96] VD Shafranov. *Plasma equilibrium in a magnetic field*. **Reviews of Plasma Physics** 2. **1966** (60, 64, 89).
- [97] HK Urbantke. *The Hopf fibration-seven times in physics*. **Journal of geometry and physics** 46 2. **2003** (69).
- [98] Bryan Gin-ge Chen, Paul J Ackerman, Gareth P Alexander, Randall D Kamien, and Ivan I Smalyukh. *Generating the Hopf fibration experimentally in nematic liquid crystals*. **Physical review letters** 110 23. **2013** (69).
- [99] I. E. Dzyloshinskii and B. A. Ivanov. *Localized topological solitons in a ferromagnet*. **Journal of Experimental and Theoretical Physics** 29 9. **1979** (69).
- [100] Carlos Hoyos, Nilanjan Sircar, and Jacob Sonnenschein. *New knotted solutions of Maxwell's equations*. **Journal of Physics A: Mathematical and Theoretical** 48 25. **2015** (69).
- [101] L Woltjer. *On hydromagnetic equilibrium*. **Proceedings of the National Academy of Sciences of the United States of America** 44 9. **1958** (69).
- [102] JN Kapur and RK Jain. *On the Stability of a Solution in Hydromagnetics in the Presence of Dissipative Forces*. **Zeitschrift fur Astrophysik** 52. **1961** (69).

- [103] Harry Bateman. *The Mathematical Analysis of Electrical and Optical Wave-motion on the Basis of Maxwell's Equations*. **1915** (70).
- [104] Mitchell Berger and George B. Field. *The topological properties of magnetic helicity*. **Journal of Fluid Mechanics** 147. **1984** (72).
- [105] A Brandenburg and W Dobler. *Hydromagnetic turbulence in computer simulations*. **Computer Physics Communications** 147 1. **2002** (72).
- [106] Nils Erland L Haugen, Axel Brandenburg, and Wolfgang Dobler. *Simulations of nonhelical hydromagnetic turbulence*. **Physical Review E** 70 1. **2004** (72).
- [107] VD Shafranov. *On magnetohydrodynamical equilibrium configurations*. **Soviet Journal of Experimental and Theoretical Physics** 6. **1958** (76).
- [108] Iwo Bialynicki-Birula. *Electromagnetic vortex lines riding atop null solutions of the Maxwell equations*. **Journal of Optics A: Pure and Applied Optics** 6 5. **2004** (76).
- [109] Yun-Tung Lau and John M Finn. *Three-dimensional kinematic reconnection in the presence of field nulls and closed field lines*. **The Astrophysical Journal** 350. **1990** (76, 80).
- [110] CE Parnell, JM Smith, T Neukirch, and ER Priest. *The structure of three-dimensional magnetic neutral points*. **Physics of Plasmas (1994-present)** 3 3. **1996** (76, 77, 80, 81).
- [111] DI Pontin. *Three-dimensional magnetic reconnection regimes: a review*. **Advances in Space Research** 47 9. **2011** (76).
- [112] John M Greene. *Geometrical properties of three-dimensional reconnecting magnetic fields with nulls*. **Journal of Geophysical Research: Space Physics (1978–2012)** 93 A8. **1988** (77).
- [113] Jean-Paul Brasselet, José Seade, and Tatsuo Suwa. *Vector fields on singular varieties*. **1987**. **2009** (78).
- [114] Harold Grad. *Containment in Cusped Plasma Systems*. Tech. rep. New York Univ., New York. Inst. of Mathematical Sciences, 1961 (80).
- [115] Nicholas A Krall. *The polywell™: A spherically convergent ion focus concept*. **Fusion Science and Technology** 22 1. **1992** (80).
- [116] Masahiro Wakatani. *Stellarator and Heliotron devices*. 95. **1998** (80).
- [117] M Mitchell Waldrop. *Plasma physics: The fusion upstarts*. **Nature** 511. **2014** (89).
- [118] JBJ Taylor. *Relaxation and magnetic reconnection in plasmas*. **Reviews of Modern Physics** 58 3. **1986** (89).
- [119] M Vandas, S Fischer, P Pelant, and A Geranios. “Magnetic clouds—Comparison between spacecraft measurements and theoretical magnetic force-free solutions”. In: *Solar Wind Seven Colloquium*. Vol. 1. 1992, 671–674 (89, 101).
- [120] David A Garren and James Chen. *Lorentz self-forces on curved current loops*. **Physics of plasmas** 1 10. **1994** (89, 100).
- [121] Rita Lorenzini, E Martinez, P Piovesan, D Terranova, P Zanica, M Zuin, A Alfier, D Bonfiglio, F Bonomo, A Canton, et al. *Self-organized helical equilibria as a new paradigm for ohmically heated fusion plasmas*. **Nature Physics** 5 8. **2009** (90, 105).

- [122] Allen H Boozer. *Non-axisymmetric magnetic fields and toroidal plasma confinement*. **Nuclear Fusion** 55 2. **2015** (90, 108).
- [123] John Wesson and David J Campbell. *Tokamaks*. 149. **2011** (92, 97).
- [124] Russell M Kulsrud. *Intuitive approach to magnetic reconnection*. **Physics of Plasmas (1994-present)** 18 11. **2011** (97).
- [125] Stig Lundquist. *Magneto-hydrostatic fields*. **Arkiv for fysik** 2 4. **1950** (100).
- [126] Paul M Bellan. *Spheromaks: a practical application of magnetohydrodynamic dynamos and plasma self-organization*. **2000** (100, 112).
- [127] S Chandrasekhar and PC Kendall. *On Force-Free Magnetic Fields*. **The Astrophysical Journal** 126. **1957** (101).
- [128] Ya I Kolesnichenko, Yu V Yakovenko, D Anderson, M Lisak, and F Wising. *Sawtooth oscillations with the central safety factor, q_0 , below unity*. **Physical review letters** 68 26. **1992** (102).
- [129] SC Jardin, N Ferraro, and I Krebs. *Self-organized stationary states of tokamaks*. **Physical review letters** 115 21. **2015** (102).
- [130] DF Escande, P Martin, S Ortolani, A Buffa, P Franz, L Marrelli, E Martines, G Spizzo, S Cappello, A Murari, et al. *Quasi-single-helicity reversed-field-pinch plasmas*. **Physical review letters** 85 8. **2000** (105).
- [131] DF Escande, R Paccagnella, S Cappello, C Marchetto, and F D'Angelo. *Chaos healing by separatrix disappearance and quasisingle helicity states of the reversed field pinch*. **Physical review letters** 85 15. **2000** (105).
- [132] D Terranova, D Bonfiglio, AH Boozer, AW Cooper, M Gobbin, Steven Paul Hirshman, R Lorenzini, L Marrelli, E Martines, B Momo, et al. *A 3D approach to equilibrium, stability and transport studies in RFX-mod improved regimes*. **Plasma Physics and Controlled Fusion** 52 12. **2010** (105).
- [133] GR Dennis, Stuart R Hudson, D Terranova, P Franz, RL Dewar, and MJ Hole. *Minimally constrained model of self-organized helical states in reversed-field pinches*. **Physical review letters** 111 5. **2013** (105).
- [134] ME Puiatti, A Alfier, F Auremma, S Cappello, L Carraro, R Cavazzana, S Dal Bello, A Fassina, DF Escande, P Franz, et al. *Helical equilibria and magnetic structures in the reversed field pinch and analogies to the tokamak and stellarator*. **Plasma Physics and Controlled Fusion** 51 12. **2009** (106).
- [135] T Sunn Pedersen, M Otte, S Lazerson, P Helander, S Bozhenkov, C Biedermann, T Klinger, RC Wolf, and H-S Bosch. *Confirmation of the topology of the Wendelstein 7-X magnetic field to better than 1: 100,000*. **Nature Communications** 7. **2016** (107).
- [136] DW Kerst. *The influence of errors on plasma-confining magnetic fields*. **Journal of Nuclear Energy. Part C, Plasma Physics, Accelerators, Thermonuclear Research** 4 4. **1962** (108).
- [137] Roscoe B White. *The theory of toroidally confined plasmas*. **2006** (108).
- [138] Joost Opschoor. "KAM and Melnikov theory describing island chains in plasmas". B.S. thesis. Leiden University, 2016 (108, 109).

- [139] BV Chirikov. *Resonance processes in magnetic traps*. **The Soviet Journal of Atomic Energy** 6 6. **1960** (109).
- [140] Dominique F Escande and Fabrice Doveil. *Renormalization method for computing the threshold of the large-scale stochastic instability in two degrees of freedom Hamiltonian systems*. **Journal of Statistical Physics** 26 2. **1981** (109).

