

List of publications of Nicolas Chamel

Contributions to collective works (3)

2017

1. **Chamel, N.**, Mutafchieva, Y. D., Stoyanov, Z. K., Mihailov, L., & Pavlov, R. (2017, May 19). Landau Quantisation of Electron Motion in the Crust of Highly Magnetised Neutron Stars. In A. Tadjer, R. Pavlov, J. Maruani, E. J. Brändas, & G. Delgado-Barrio (Eds.), *Quantum Systems in Physics, Chemistry, and Biology: Advances in Concepts and Applications* (pp. 181-191). Springer. doi:10.1007/978-3-319-50255-7_11

2013

2. **Chamel, N.**, Pearson, M. J., & Goriely, S. (2013, March). Pairing: from atomic nuclei to neutron-star crusts. In R. Broglia & V. Zelevinsky (Eds.), *50 years of nuclear BCS: Pairing in Finite Systems* (pp. 284-296). World Scientific. doi:10.1142/9789814412490_0021

2012

3. Goriely, S., **Chamel, N.**, & Pearson, M. J. (2012). Neutron-star crusts and finite nuclei. In C. Bertulani & J. Piekarewicz (Eds.), *Neutron Star Crust* (pp. 213-233). Hauppauge, New York: Nova Science Publishers.

Peer-reviewed journal articles (82)

2017

4. **Chamel, N.** (2017, September 12). Superfluidity and Superconductivity in Neutron Stars. *Journal of astrophysics and astronomy*, 38, 43. doi:https://doi.org/10.1007/s12036-017-9470-9
5. Chatterjee, D., Fantina, A., **Chamel, N.**, Novak, J., & Oertel, M. (2017, March 30). On the maximum mass of magnetized white dwarfs. *Monthly notices of the Royal Astronomical Society*, 469, 95. doi:https://doi.org/10.1093/mnras/stx781
6. **Chamel, N.**, Fantina, A., Pearson, M. J., & Goriely, S. (2017, March 22). Role of nuclear spin-orbit coupling on the constitution of the outer crust of a nonaccreting neutron star. *EPJ web of conferences*, 137, 09001. doi:https://doi.org/10.1051/epjconf/201713709001
7. Fantina, A., **Chamel, N.**, Pearson, M. J., & Goriely, S. (2017, March 16). Symmetry energy and composition of the outer crust of neutron stars. *Il Nuovo cimento C.*, 39(6), 400. doi:10.1393/ncc/i2016-16400-1

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8. **Chamel, N.**, & Fantina, A. (2016, December 09). Binary and ternary ionic compounds in the outer crust of a cold nonaccreting neutron star. *Physical review. C, Nuclear physics*, 94, 065802. doi:10.1103/PhysRevC.94.065802
9. Pena Arteaga, D., Goriely, S., & **Chamel, N.** (2016, October 24). Relativistic mean-field mass models. *European Physical Journal A. Hadrons and nuclei*, 52, 320. doi:10.1140/epja/i2016-16320-x

10. Sourie, A., **Chamel, N.**, Novak, J., & Oertel, M. (2016, October 12). Global numerical simulations of the rise of vortex-mediated pulsar glitches in full general relativity. *Monthly notices of the Royal Astronomical Society*, 464(4), 4641-4657. doi:10.1093/mnras/stw2613
11. Delsate, T., **Chamel, N.**, Gürlebeck, N., Fantina, A., Pearson, J. M. J., & Ducoin, C. C. (2016, July 19). Giant pulsar glitches and the inertia of neutron star crusts. *Physical Review D - Particles, Fields, Gravitation and Cosmology*, 94, 023008. doi:10.1103/PhysRevD.94.023008
12. **Chamel, N.**, Mutafchieva, Y. D., Stoyanov, Z. K., Mihailov, L., & Pavlov, R. (2016, July 14). Landau quantization and neutron emissions by nuclei in the crust of a magnetar. *Journal of physics. Conference series*, 724(1), 012034. doi:10.1088/1742-6596/724/1/012034
13. Stoyanov, Z. K., Pavlov, R., Mihailov, L., Velchev, C. J., Mutafchieva, Y. D., Tonev, D., & **Chamel, N.** (2016, July 14). Nuclear induced effects and mass correlations in low and multiply charged helium-like ions. *Journal of physics. Conference series*, 724(1), 012048. doi:10.1088/1742-6596/724/1/012048
14. Goriely, S., **Chamel, N.**, & Pearson, (2016, March 31). Further explorations of Skyrme-Hartree-Fock-Bogoliubov mass formulas. XVI: Inclusion of self-energy effects in pairing. *Physical review. C, Nuclear physics*, 93, 034337. doi:10.1103/PhysRevC.93.034337
15. **Chamel, N.**, & Fantina, A. (2016, March 08). Electron exchange and polarization effects on electron captures and neutron emissions by nuclei in white dwarfs and neutron stars. *Physical Review D - Particles, Fields, Gravitation and Cosmology*, 93, 063001. doi:http://dx.doi.org/10.1103/PhysRevD.93.063001
16. **Chamel, N.** (2016, February 01). Constraint on the internal structure of neutron stars from pulsar glitches. *Pos proceedings of science*, 262(013).
17. Fantina, A., **Chamel, N.**, Mutafchieva, Y. D., Stoyanov, Z. K., Mihailov, L., & Pavlov, R. (2016, January 15). Role of the symmetry energy on the neutron-drip transition in accreting and nonaccreting neutron stars. *Physical review. C, Nuclear physics*, 93, 015801. doi:10.1103/PhysRevC.93.015801
18. **Chamel, N.**, Fantina, A., Pearson, J. M. J., & Goriely, S. (2016, January 05). Symmetry energy from nuclear masses and neutron-star observations using generalised Skyrme functionals. *Journal of physics. Conference series*, 665, 012066. doi:http://dx.doi.org/10.1088/1742-6596/665/1/012066
19. **Chamel, N.**, Page, D., & Reddy, S. (2016, January 05). Collective excitations in neutron-star crusts. *Journal of physics. Conference series*, 665, 012065. doi:http://dx.doi.org/10.1088/1742-6596/665/1/012065
20. Pastore, A., Martini, M., Davesne, D., Navarro, J., **Chamel, N.**, & Goriely, S. (2016, January 05). Neutrino mean free path in neutron matter with Brussels-Montreal Skyrme functionals. *Journal of physics. Conference series*, 665, 012067. doi:10.1088/1742-6596/665/1/012067

21. Goriely, S., **Chamel, N.**, & Pearson, (2016, January 05). Latest results of Skyrme-Hartree-Fock-Bogoliubov mass formulas. *Journal of physics. Conference series*, 665, 012038. doi:10.1088/1742-6596/665/1/012038

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22. **Chamel, N.**, & Fantina, A. (2015, July 14). Electron capture instability in magnetic and nonmagnetic white dwarfs. *Physical Review D - Particles, Fields, Gravitation and Cosmology*, 92, 023008. doi:http://dx.doi.org/10.1103/PhysRevD.92.023008
23. **Chamel, N.**, Stoyanov, Z. K., Mihailov, L., Mutafchieva, Y. D., Pavlov, R., & Velchev, C. J. (2015, June 02). Role of Landau quantization on the neutron-drip transition in magnetar crusts. *Physical review. C. Nuclear physics*, 91, 065801. doi:10.1103/PhysRevC.91.065801
24. **Chamel, N.**, Fantina, A., Zdunik, J. L., & Haensel, P. (2015, May 08). Neutron drip transition in accreting and nonaccreting neutron star crusts. *Physical review. C, Nuclear physics*, 91, 055803. doi:http://dx.doi.org/10.1103/PhysRevC.91.055803
25. **Chamel, N.**, Pearson, M. J., Fantina, A., Ducoin, C., Goriely, S., & Pastore, A. (2015, March 30). Brussels–Montreal Nuclear Energy Density Functionals, from Atomic Masses to Neutron Stars. *Acta Physica Polonica B*, 46(3), 349-358. doi:10.5506/APhysPolB.46.349
26. Pastore, A., **Chamel, N.**, & Margueron, J. (2015, February 21). Heat capacity of low-density neutron matter: from quantum to classical regimes. *Monthly notices of the Royal Astronomical Society*, 448, 1187-1892. doi:10.1093/mnras/stv095
27. Pearson, M. J., **Chamel, N.**, Pastore, A., & Goriely, S. (2015, January 14). Role of proton pairing in a semimicroscopic treatment of the inner crust of neutron stars. *Physical review. C. Nuclear physics*, 91, 018801. doi:http://dx.doi.org/10.1103/PhysRevC.91.018801

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28. **Chamel, N.** (2014, December 01). On the Lie subalgebra of Killing-Milne and Killing-Cartan vector fields in Newtonian space-time. *International journal of modern physics D*, 24(2), 1550018. doi:10.1142/S0218271815500182
29. Pastore, A., Martini, M., Davesne, D., Navarro, G., Goriely, S., & **Chamel, N.** (2014, August 29). Linear response theory and neutrino mean free path using Brussels-Montreal Skyrme functionals. *Physical review. C, Nuclear physics*, 90, 025804. doi:http://dx.doi.org/10.1103/PhysRevC.90.025804
30. **Chamel, N.**, Molter, E., Fantina, A., & Arteaga, P. D. (2014, August 05). Maximum strength of the magnetic field in the core of the most massive white dwarfs. *Physical Review D - Particles, Fields, Gravitation and Cosmology*, 90, 043002. doi:http://dx.doi.org/10.1103/PhysRevD.90.043002
31. Fantina, A., **Chamel, N.**, Pearson, M. J., & Goriely, S. (2014, March 20). Constraints on the equation of state of cold dense matter from nuclear physics and astrophysics. *EPJ web of conferences*, 66, 07005. doi:10.1051/epjconf/20146607005

32. Pearson, M. J., **Chamel, N.**, Fantina, A., & Goriely, S. (2014, February 27). Symmetry energy: nuclear masses and neutron stars. *European Physical Journal A. Hadrons and Nuclei*, *50*, 43. doi:10.1140/epja/i2014-14043-8
33. Velchev, C. C., Pavlov, R. R., Mihailov, L., **Chamel, N.**, Stoyanov, Z. Z., Mutafchieva, Y. Y., & Ivanovich, M. M. (2014). Correlation effects of heliumoid electron-nuclear systems. *Dokladi na B'lgarskata akademiâ na naukite*, *67*(11), 1513-1520.

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34. Goriely, S., **Chamel, N.**, & Pearson, M. J. (2013, December 05). Hartree-Fock-Bogoliubov nuclear mass model with 0.50 MeV accuracy based on standard forms of Skyrme and pairing functionals. *Physical review. C, Nuclear physics*, *88*, 061302.
35. Potekhin, A., Fantina, A., **Chamel, N.**, Pearson, M. J., & Goriely, S. (2013, December 03). Analytical representations of unified equations of state for neutron-star matter. *Astronomy & astrophysics*, *560*, 48. doi:10.1051/0004-6361/201321697
36. Fantina, A., **Chamel, N.**, Pearson, M. J., & Goriely, S. (2013, November 26). Neutron star properties with unified equations of state of dense matter. *Astronomy & astrophysics*, *559*, 128. doi:10.1051/0004-6361/201321884
37. **Chamel, N.**, Fantina, A., & Davis, P. (2013, October 08). Stability of super-Chandrasekhar magnetic white dwarfs. *Physical review. D, Particles, fields, gravitation, and cosmology*, *88*(8), 081301. doi:10.1103/PhysRevD.88.081301
38. Pearson, M. J., Goriely, S., & **Chamel, N.** (2013, September 01). Microscopic mass models for astrophysics. *International journal of mass spectrometry*, *349*(1), 57. doi:10.1016/j.ijms.2013.04.003
39. Goriely, S., **Chamel, N.**, & Pearson, M. J. (2013, August 07). Further explorations of Skyrme-Hartree-Fock-Bogoliubov mass formulas. XIII. The 2012 atomic mass evaluation and the symmetry coefficient. *Physical review. C, Nuclear physics*, *88*, 024308. doi:10.1103/PhysRevC.88.024308
40. **Chamel, N.**, Haensel, P., Zdunik, J. L., & Fantina, A. (2013, July 05). On the maximum mass of neutron stars. *International journal of modern physics E*, *22*, 1330018. doi:10.1142/S021830131330018X
41. **Chamel, N.**, Fantina, A., Pearson, M. J., & Goriely, S. (2013, April 25). Phase transitions in dense matter and the maximum mass of neutron stars. *Astronomy & astrophysics*, *553*, 22. doi:10.1051/0004-6361/201220986
42. **Chamel, N.**, Page, D., & Reddy, S. (2013, March 25). Low-energy collective excitations in the neutron star inner crust. *Physical review. C, Nuclear physics*, *87*, 035803. doi:10.1103/PhysRevC.87.035803
43. Wolf, R., Beck, D., Blaum, K., Bohm, C., Borgmann, C., Breitenfeldt, M., **Chamel, N.**, Goriely, S., Herfurth, F., Kowalska, M., Kreim, S., Lunney, D., Manea, V., Minaya Ramirez, E., Naimi, S., Neidherr, D., Pearson, M. J., Rosenbusch, M., Schweikhard, L., Stanja, J., Wienholtz, F., & Zuber, K. (2013, January 22). Plumbing neutron stars to new depths

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44. **Chamel, N.** (2013, January 02). Crustal Entrainment and Pulsar Glitches. *Physical review letters*, 110(1), 011101. doi:10.1103/PhysRevLett.110.011101
45. **Chamel, N.**, Pavlov, R., Mihailov, L., Velchev, C. J., Stoyanov, Z. K., Mutafchieva, Y. D., & Ivanovich, M. D. (2013). Exotic Nuclei in the Crust of Magnetars. *Bulgarian Journal of Physics*, 40(4), 275-280.

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47. Pearson, M. J., **Chamel, N.**, Goriely, S., & Ducoin, C. (2012, June 11). Inner crust of neutron stars with mass-fitted Skyrme functionals. *Physical review. C, Nuclear physics*, 85, 065803. doi:10.1103/PhysRevC.85.065803
48. **Chamel, N.** (2012, March 12). Neutron conduction in the inner crust of a neutron star in the framework of the band theory of solids. *Physical review. C, Nuclear physics*, 85(3), 035801. doi:10.1103/PhysRevC.85.035801
49. **Chamel, N.** (2012). Chasing Neutron Stars. *Histoire de la recherche contemporaine*, 1(2), 160-167. doi:10.4000/hrc.166
50. Fantina, A., **Chamel, N.**, Pearson, M. J., & Goriely, S. (2012). Unified equation of state for neutron stars and supernova cores using the nuclear energy-density functional theory. *Journal of physics. Conference series*, 342, 012003. doi:10.1088/1742-6596/342/1/012003

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52. Pearson, M. J., Goriely, S., & **Chamel, N.** (2011, June 27). Properties of the outer crust of neutron stars from Hartree-Fock-Bogoliubov mass models. *Physical review. C, Nuclear physics*, 83(6), 065810, 1-11. doi:10.1103/PhysRevC.83.065810
53. Goriely, S., **Chamel, N.**, Janka, H.-T., & Pearson, M. J. (2011, June 15). The decompression of the outer neutron star crust and r-process nucleosynthesis. *Astronomy & astrophysics*, 531, A78. doi:10.1051/0004-6361/201116897
54. **Chamel, N.** (2011, February 22). A stellar superfluid. *Physics*, 4, 14. doi:10.1103/Physics.4.14
55. Goriely, S., **Chamel, N.**, & Pearson, M. J. (2011). HFB mass models for nucleosynthesis applications. *Journal of the Korean Physical Society*, 59, 2100-2105. doi:10.3938/jkps.59.2100

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57. **Chamel, N.** (2010, December 01). Self-interaction errors in nuclear energy density functionals. *Physical review. C, Nuclear physics*, 82(6), 061307. doi:http://dx.doi.org/10.1103/PhysRevC.82.061307
58. Pavlov, R., Mihailov, L., Velchev, C. J., Ivanovich, M. D., Stoyanov, Z. K., **Chamel, N.**, & Maruani, J. (2010, November). Effects induced by nuclear deformations and electron correlations on the ground-state energy of low and multiply charged helium like ions in high-temperature plasmas. *Journal of physics. Conference series*, 253(1), 012075. doi:10.1088/1742-6596/253/1/012075
59. **Chamel, N.**, & Goriely, S. (2010, October 29). Spin and spin-isospin instabilities in asymmetric nuclear matter at zero and finite temperatures using Skyrme functionals. *Physical review. C. Nuclear physics*, 82, 045804-045811. doi:http://dx.doi.org/10.1103/PhysRevC.82.045804
60. Goriely, S., **Chamel, N.**, & Pearson, M. J. (2010, September 24). Further explorations of Skyrme-Hartree-Fock-Bogoliubov mass formulas XII: Stiffness and stability of neutron-star matter. *Physical review. C. Nuclear physics*, 82, 035804-035818. doi:10.1103/PhysRevC.82.035804
61. Pearson, M. J., **Chamel, N.**, & Goriely, S. (2010, September 09). Breathing-mode measurements in Sn isotopes and isospin dependence of nuclear incompressibility. *Physical review. C. Nuclear physics*, 82, 037301-037032. doi:http://dx.doi.org/10.1103/PhysRevC.82.037301
62. **Chamel, N.** (2010, July 22). Effective contact pairing forces from realistic calculations in infinite homogeneous nuclear matter. *Physical review. C. Nuclear physics*, 82(1), 014313. doi:10.1103/PhysRevC.82.014313
63. **Chamel, N.**, Goriely, S., Pearson, M. J., & Onsi, M. (2010, April 13). Unified description of neutron superfluidity in the neutron-star crust with analogy to anisotropic multi-band BCS superconductors. *Physical review. C, Nuclear physics*, 81, 045804. doi:10.1103/PhysRevC.81.045804
64. Pethick, C., **Chamel, N.**, & Reddy, S. (2010). Superfluid Dynamics in Neutron Star Crusts. *Progress of theoretical physics. Supplement*, 186, 9-16. doi:10.1143/PTPS.186.9

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68. **Chamel, N.**, Margueron, J., & Khan, E. (2009, January 09). Neutron specific heat in the crust of neutron stars from the nuclear band theory. *Physical Review C (Nuclear Physics)*, 79(1), 012801. doi:http://dx.doi.org/10.1103/PhysRevC.79.012801
69. Minaya Rainirez,, Audi, G., Lunney, D., Naimi, S., Beck, D. D., Herfurth, F., Blaum, K., Borgmann, C., George, S. S., Kellerbauer, A., Bohm, C., Neidherr, D., Breitenfeldt, M., Rosenbusch, M., Schweikhard, L., **Chamel, N.**, Goriely, S., Herlert, A., Kowalska, M., Pearson,, & Schwarz, S. S. (2009). Neutron drip-line topography. *AIP Conference Proceedings*, 1165, 94-97. doi:10.1063/1.3232162

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71. **Chamel, N.**, & Haensel, P. (2008, October). Physics of neutron star crusts. *Living Review on Relativity*, 11.
72. Onsi, M., Dutta, A., Chatri, H., Goriely, S., **Chamel, N.**, & Pearson, M. J. (2008, June). Semi-classical equation of state and specific-heat expressions with proton shell corrections for the inner crust of a neutron star. *Physical review. C. Nuclear physics*, 77(6), 065805. doi:10.1103/PhysRevC.77.065805
73. **Chamel, N.** (2008, February 07). Two-fluid models of superfluid neutron star cores. *Monthly notices of the Royal Astronomical Society*, 388(2), 737-752. doi:10.1111/j.1365-2966.2008.13426.x

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76. **Chamel, N.**, & Carter, B. D. (2006, May 11). Effect of entrainment on stress and pulsar glitches in stratified neutron star crust. *Monthly notices of the Royal Astronomical Society*, 368(2), 796-808. doi:10.1111/j.1365-2966.2006.10170.x

77. Carter, B. D., **Chamel, N.**, & Haensel, P. (2006, May 01). Entrainment coefficient and effective mass for conduction neutrons in neutron star crust: Macroscopic treatment. *International Journal of Modern Physics D: Gravitation, Astrophysics and Cosmology*, 15(5), 777-803.
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Papers published in national and international conferences or symposium proceedings (21)

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86. Oertel, M., Chatterjee, D., Fantina, A., **Chamel, N.**, & Novak, J. (2016, December 01). Models of magnetized white dwarfs. *Proceedings of the annual meeting of the French Society of Astronomy & Astrophysics Lyon, June 14-17, 2016* (pp. 51-55).

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88. **Chamel, N.**, Fantina, A., Zdunik, J. L., & Haensel, P. (2015, December 25). Deep Crustal Heating in Accreted Neutron Star Crusts Using the Brussels-Montreal HFB-27 * Nuclear Mass Model. In N. Minkov & M. Gaidarov (Eds.), *Proceedings of the 34-th International Workshop on Nuclear Theory*. Vol. 34 (1 ed., pp. 126-131). Sofia, Bulgarie: Heron Press Ltd.
89. Fantina, A., **Chamel, N.**, Pearson, M. J., & Goriely, S. (2015, February 24). Neutron-star matter within the energy-density functional theory and neutron-star structure. *EXOTIC NUCLEI AND NUCLEAR/PARTICLE ASTROPHYSICS (V). FROM NUCLEI TO STARS: Carpathian Summer School of Physics 2014*: Vol. 1645 (pp. 92-100). AIP Publishing.

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