

## Temas/Artigos para os trabalhos

Os trabalhos serão baseados em artigos fundamentais (ou o que penso ser) mas deve ser dividido em duas partes: a primeira, introduz os conceitos fundamentais que o artigo trata e a segunda os resultados do artigo. Apresentação estilo journal-club. Manuscrito no máximo de 10 páginas.

1. *Quantum Spin Hall Insulator State in HgTe Quantum Wells*, Markus König, Steffen Wiedmann, Christoph Brüne, Andreas Roth, Hartmut Buhmann, Laurens W. Molenkamp, Xiao-Liang Qi, Shou-Cheng Zhang, *Science* **318**, 766 (2007).
2. *Measurement of a solid-state triple point at the metal–insulator transition in VO<sub>2</sub>*, Jae Hyung Park, Jim M. Coy, T. Serkan Kasirga, Chunming Huang, Zaiyao Fei, Scott Hunter and David H. Cobden, *Nature* **500**, 431 (2013).
3. *Thermodynamic and kinetic mechanisms in self-assembled quantum dot formation*, Albert-László Barabási, *Materials Science and Engineering* **B67**, 23, (1999).
4. *Skyrmions and the crossover from the integer to fractional quantum Hall effect at small Zeeman energies*, S. L. Sondhi, A. Karlhede, S. A. Kivelson, E. H. Rezayi, *Phys. Rev. B* **47**, 16419–16426 (1993).
5. *Magnetic order close to superconductivity in the iron-based layered LaO<sub>1-x</sub>FxFeAs systems*, Clarina de la Cruz Q. Huang, J. W. Lynn, Jiying Li, W. Ratcliff II, J. L. Zarestky, H. A. Mook, G. F. Chen, J. L. Luo, N. L. Wang and Pengcheng Dai, *Nature* **453**, 899 (2008).
6. *Magnetic Hardening Induced by Nonmagnetic Organic Molecules*, Martin Callsen, Vasile Caciuc, Nikolai Kiselev, Nicolae Atodiresei, and Stefan Blügel, *Phys. Rev. Lett.* **111**, 106805 (2013).
7. *Nanosecond Electro-Optic Switching of a Liquid Crystal*, Volodymyr Borshch, Sergij V. Shiyanovskii, and Oleg D. Lavrentovich, *Phys. Rev. Lett.* **111**, 107802 (2013).
8. *First-Principles Determination of Ultrahigh Thermal Conductivity of Boron Arsenide: A Competitor for Diamond?*, L. Lindsay, D. A. Broido, and T. L. Reinecke, *Phys. Rev. Lett.* **111**, 025901 (2013).
9. *Dynamics of Glass Relaxation at Room Temperature*, Roger C. Welch, John R. Smith, Marcel Potuzak, Xiaoju Guo, Bradley F. Bowden, T. J. Kiczanski, Douglas C. Allan, Ellyn A. King, Adam J. Ellison, and John C. Mauro, *Phys. Rev. Lett.* **110**, 265901 (2013).
10. *Giant Plasticity of a Quantum Crystal*, Ariel Haziot, Xavier Rojas, Andrew D. Fefferman, John R. Beamish, and Sébastien Balibar, *Phys. Rev. Lett.* **110**, 035301 (2013).

11. *Observation of Self-Binding in Monolayer  $^3\text{He}$* , D. Sato, K. Naruse, T. Matsui, and Hiroshi Fukuyama, Phys. Rev. Lett. **109**, 235306 (2012).
12. *Acoustic Analog to the Dynamical Casimir Effect in a Bose-Einstein Condensate*, J.-C. Jaskula, G. B. Partridge, M. Bonneau, R. Lopes, J. Ruaudel, D. Boiron, and C. I. Westbrook, Phys. Rev. Lett. **109**, 220401 (2012).
13. (1) *Classical Time Crystals*, Alfred Shapere and Frank Wilczek, Phys. Rev. Lett. **109**, 160402 (2012); (2) *Quantum Time Crystals*, Frank Wilczek, Phys. Rev. Lett. **109**, 160401 (2012); (3) *Space-Time Crystals of Trapped Ions*, Tongcang Li, Zhe-Xuan Gong, Zhang-Qi Yin, H. T. Quan, Xiaobo Yin, Peng Zhang, L.-M. Duan, and Xiang Zhang, Phys. Rev. Lett. **109**, 163001 (2012).
14. *Signatures of Majorana Fermions in Hybrid Superconductor-Semiconductor Nanowire Devices*, V. Mourik, K. Zuo, S. M. Frolov, S. R. Plissard, E. P. A. M. Bakkers, L. P. Kouwenhoven, Science **336**, 1003 (2012).
15. spin glasses