

Reviews and selected publications.

Reviews :

1. N. Kirova and S. Brazovskii, "Electronic ferroelectricity in carbon based materials", *Int. J. of Synthetic Metals*, **216**, 11, (2016); arXiv:1512.04282.
2. Serguei Brazovskii and Natasha Kirova, "Physical theory of excitons in conducting polymers" *Chem. Soc. Rev.*, **39**, 2453–2465 (2010), Special volume, Park Y.W, Ed.
3. S. Brazovskii, "Microscopic solitons in correlated electronic systems: theory versus experiment." *ADVANCES IN THEORETICAL PHYSICS: 1134*, 74 (2009).
4. S. Brazovskii "Ferroelectricity and Charge Ordering in Quasi One-Dimensional Organic Conductors", in "Physics of Organic Superconductors and Conductors", A.G. Lebed ed., Springer Series in Materials Sciences, v. **110**, pp. 313-356 (2008).
5. S.Brazovskii, T.Nattermann, "Pinning and Sliding of Driven Elastic Systems: from Domain Walls to Charge Density Waves", *Advances in Physics*, **53**, 177 (2004).
6. S.Brazovskii, N.Kirova, "Electron selflocalization and superstructures in quasi one-dimensional dielectrics", *Sov. Sci. Revs., Sec. A*, I. M. Khalatnikov Ed., v.5, p. 99 (Harwood Acad. Publ.,1984).
Modern version: "Electron self-localization, solitons, and periodic superstructures in quasi one-dimensional electronic systems: Peierls insulator, Frohlich state, charge density wave"
<http://lptms.u-psud.fr/membres/brazov/solitons-review,web.pdf>

Selected publications:

1. S.Brazovskii, "The semimetal-dielectric phase transition in a magnetic field", *Sov. Phys. JETP* **35** (1972) 433.
2. S.Brazovskii, "Phase transition of an isotropic system to a nonuniform state", *Sov. Phys. JETP*, **41** (1975) 85.
3. S.Brazovskii, "Electronic excitations in the Peierls-Fröhlich state", *JETP Letters* **28**, (1978) 606.
4. S.Brazovskii, N.Kirova, "Excitons, polarons and bipolarons in conducting polymers", *JETP Letters* **33** (1981) 4.
5. S.Brazovskii, I.Dzyaloshinskii, N.Kirova, "Spin states in the Peierls model and finite-band potentials", *Sov. Phys. JETP*, **54** (1981) 1209.
6. T.Bohr, S.Brazovskii, "Soliton statistics for a system of weakly bound chains: mapping to the Ising model", *J. Phys. C*, **16** (1983) 1189.
7. S.Brazovskii, V.Yakovenko, "On the theory of phase transitions in organic superconductors" *J. de Physique Lett.*, **46** (1985) 111.
8. S.Brazovskii, I.Luk'yanchuk "Symmetry of electronic states in antiferromagnets" *Sov. Phys. JETP*, **69** (1989) 1180.
9. S.Brazovskii, "A general approach to charge/spin density waves electrodynamics." *J. de Physique I*, **3** (1993) 2417.
10. S.Brazovskii, S.Matveenko, P.Nozieres, "Spin excitations carry charge currents: one dimensional Hubbard model." *J. Physique I*, **4** (1994) 571.
11. H.Mayaffre, P.Wzietek, D.Jérome, S.Brazovskii, "2D vortex melting in organic superconductors and NMR relaxation induced by vortex structure defects.", *Phys. Rev. Lett.*, **76** (1996) 4951.
12. S.Brazovskii, A.Larkin "Unified approach to I-V characteristics, second threshold field and anomalous low T susceptibility of Charge/Spin Density Waves.", *Synth. Met.*, **86** (1997) 2223.
13. S.Brazovskii, N.Kirova, "Theory of plastic flows in application to a current conversion", *J. de Physique IV*, **9** (1999) Pr10-139.
14. S.Brazovskii, N.Kirova, H.Requardt, F.Ya.Nad, P.Monceau, et al, "Plastic Sliding, Strained states of Density Waves: X-Ray Space Resolved Studies versus Theory of Current Conversion." *Phys. Rev. B*, **61** (2000) 10640.

15. P.Monceau, F.Ya. Nad, S.Brazovskii, "The ferroelectric Mott-Hubbard phase of organic (TMTTF)₂x conductors.", *Phys. Rev. Lett.*, **86** (2001) 4080
16. S.Brazovskii, "Topological Confinement of Spins and Charges: Spinons as pi- junctions" in "Electronic correlations: from meso- to nano-physics", EDP Sciences (2001) p. 315 (cond-mat/0204147).
17. N.Kirova, S.Brazovskii, "Conjugated polymers at the verge of strongly correlated systems and 1D semiconductors", *Synthetic Metals*, **41** (2004) 139.
18. Yu. I. Latyshev, P. Monceau, S. Brazovskii, A. P. Orlov, and T. Fournier "Observation of Charge Density Wave Solitons in Overlapping Tunnel Junctions" *Phys. Rev. Lett.*, **95**, 266402 (2005).
19. Yu. I. Latyshev, P. Monceau, S. Brazovskii, A. P. Orlov, and T. Fournier "Subgap collective tunneling and its staircase structure in charge density waves" *Phys. Rev. Lett.*, **96**, 116402 (2006).
20. S.Brazovskii and S.I. Matveenko, "Theory of subgap interchain tunnelling in quasi one-dimensional conductors", *Phys. Rev.*, B **77**, 155432 (2008).
21. S. Brazovskii, "Microscopic solitons in correlated electronic systems: theory versus experiment." *Advances in theoretical physics: Landau Memorial Conf.*, AIP Conf. Proceedings **1134**, p. 74 (2009).
22. R. Yusupov, T. Mertelj, V.V. Kabanov, S. Brazovskii, J.-H. Chu, I. R. Fisher, and D. Mihailovic, "Coherent dynamics of macroscopic electronic order through a symmetry breaking transition", *Nature Physics*, **6**, 681 (2010).
23. S. Brazovskii, Ch. Brun, Z.Z. Wang, P. Monceau, " Scanning-tunneling microscope imaging of single-electron solitons in incommensurate charge-density waves", *Phys. Rev. Lett.*, **108**, 096801 (2012).
24. T. Yi, A. Rojo Bravo, N. Kirova, and S. Brazovskii, "Multi-vortex Dynamics in Junctions of Charge Density Waves", *J. Supercond. Nov. Mag.* (2014).
25. L. Stojchevska, I. Vaskivskiy, T. Mertelj, P. Kusar, D. Svetin, S. Brazovskii, and D. Mihailovic, "Ultrafast switching to a stable hidden quantum state in an electronic crystal", *Science*, **344**, 177 (2014).
26. I. Vaskivskiy, J. Gospodaric, S. Brazovskii, D. Svetin, P. Sutar, E. Goresnik, I.A. Mihailovic, T. Mertelj, D. Mihailovic, "Controlling the metal-to-insulator relaxation of the metastable hidden quantum state in 1T-TaS₂", *Sci. Adv.*, **1**, 1500168 (2015).
27. I. Vaskivskiy, I. A. Mihailovic, S. Brazovskii, J. Gospodaric, T. Mertelj, D. Svetin, P. Sutar, D. Mihailovic, "Fast non-thermal switching between macroscopic charge-ordered quantum states induced by charge injection", *Nature Communications* **7**, 11442 (2016)
28. S. Brazovskii and N. Kirova, "Dynamical phase transitions and patterns formation induced by a pulse pumping of excitons to a system near a thermodynamic instability", *Phys. Rev. B*, **94**, 054302 (2016)
29. A.P. Orlov, A.A. Sinchenko, P.Monceau, S. Brazovskii and Y.I. Latyshev. "Hall voltage drives pulsing counter-currents of the sliding charge density wave and of quantized normal carriers at self-filled Landau levels" *NPJ Quantum Materials*, **2**, 61 (2017).
30. P. Karpov, S. Brazovskii, "Modeling of networks and globules of charged domain walls observed in pump and pulse induced states", *NPJ Scientific Reports* **8**, 4043 (2018).
31. P. Karpov and S. Brazovskii, "Phase transitions and pattern formation in ensembles of phase-amplitude solitons in quasi-one-dimensional electronic systems", *Phys. Rev. E* **99**, 022114 (2019)
32. S. Brazovskii and N. Kirova, "From chiral anomaly to two-fluid hydrodynamics for electronic vortices", *Annals of Physics*, **403** (2019) 184.
33. Y.A. Gerasimenko, P. Karpov, I. Vaskivskiy, S. Brazovskii & D. Mihailovic, "Intertwined chiral charge orders and topological stabilization of the light-induced state of a prototypical transition metal dichalcogenide", *NPJ Quantum Materials*, **4**, 32 (2019).
34. S. Brazovskii and N. Kirova, "Multi-fluid hydrodynamics of the sliding with currents of electrons and solitons in charge density waves", *JETP, I.M. Khalatnikov 100 anniversary volume*, **129**, 659 (2019).
35. S. Brazovskii and N. Kirova, "Phase slips, dislocations, half-integer vortices, two-fluid hydrodynamics and the chiral anomaly in charge and spin density waves.", *JETP, I.E. Dzyaloshinskii anniversary v.* (2021).