

Refereed publications:

1. Riquelme, M. & **Spitkovsky, A.** 2011, “*Electron Injection by Whistler Waves in Non-relativistic Shocks,*” ApJ, 733, 63
2. Granot, J., Komissarov, S. & **Spitkovsky, A.** 2011, “*Impulsive Acceleration of Strongly Magnetized Relativistic Flows,*” MNRAS, 411, 1323
3. Sironi, L. & **Spitkovsky, A.** 2011 “*Particle Acceleration in Relativistic Magnetized Collisionless Electron-Ion Shocks,*” ApJ, 726, 75
4. Riquelme, M. & **Spitkovsky, A.** 2010, “*Magnetic Amplification by Magnetized Cosmic Rays in Supernova Remnant Shocks,*” ApJ, 717, 1054
5. Bai, X. & **Spitkovsky, A.** 2010, “*Modeling of Gamma-ray Pulsar Light Curves Using the Force-free Magnetic Field,*” ApJ, 715, 1282
6. Bai, X. & **Spitkovsky, A.** 2010, “*Uncertainties of Modeling Gamma-ray Pulsar Light Curves Using Vacuum Dipole Magnetic Field,*” ApJ, 715, 1270
7. Gedalin, M., **Spitkovsky, A.**, Medvedev, M., Balikhin, M., Krasnoselskikh, V., Valvads, A. & Perri, S. 2010, “*Relativistic filamentary equilibria,*” Journal of Plasma Physics, doi:10.1017/S002237781000005X
8. Gedalin, M., Medvedev, M, **Spitkovsky, A.**, Krasnoselskikh, V., Balikhin, M., Vaivads, A., Perri, S. 2010, “*Growth of Filaments and Saturation of the Filamentation Instability,*” Ph. Plasmas, 17, 032108
9. Jiang, Y. -F., Ciotti, L., Ostriker, J. P. & **Spitkovsky, A.** 2009, “*Synchrotron Emission from Elliptical Galaxies Consequent to AGN outbursts,*” ApJ, 711, 125
10. Sironi, L. & **Spitkovsky, A.** 2009, “*Synthetic Spectra from Particle-In-Cell Simulations of Relativistic Collisionless Shocks,*” ApJ Lett., 707, L92
11. Giannios, D. & **Spitkovsky, A.** 2009, “*Signatures of a Maxwellian component in shock-accelerated electrons in GRBs,*” MNRAS, 400, 330
12. Heng, K. & **Spitkovsky, A.** 2009, “*Magnetohydrodynamic Shallow Water Waves: Linear Analysis,*” ApJ, 703, 1819
13. Sironi, L. & **Spitkovsky, A.** 2009, “*Particle Acceleration in Relativistic Magnetized Collisionless Pair Shocks: Dependence of Shock Acceleration on Magnetic Obliquity,*” ApJ, 698, 1523
14. Riquelme, M. & **Spitkovsky, A.** 2009, “*Non-Linear Study of Bell’s Cosmic Ray Current-Driven Instability,*” ApJ, 694, 626
15. Keshet, U., Katz, B., **Spitkovsky, A.** & Waxman E. 2009, “*Magnetic field evolution in relativistic unmagnetized collisionless shocks,*” ApJ Lett., 693, L127

16. Medvedev, M. & **Spitkovsky, A.** 2009, “Radiative Cooling in Relativistic Collisionless Shocks: Can Simulations and Experiments Probe Relevant GRB Physics?” *ApJ*, 700, 956
17. **Spitkovsky, A.** 2008, “Particle Acceleration in Relativistic Collisionless Shocks: Fermi Process at Last?” *ApJ Lett.*, 682, L5
18. **Spitkovsky, A.** 2008, “On the Structure of Relativistic Collisionless Shocks in Electron-Ion Plasmas,” *ApJ Lett.*, 673, L39
19. Riquelme, M & **Spitkovsky, A.** 2008, “Kinetic Simulations of the Current-Driven Instability in Cosmic Ray Modified Shocks,” *Int. J. Modern Physics*, 17, 1803
20. Chang P., **Spitkovsky, A.** & Arons J. 2008, “Long Term Evolution of Magnetic Turbulence in Relativistic Collisionless Shocks: Electron-Positron Plasmas,” *ApJ*, 674, 378
21. **Spitkovsky, A.** 2006, “Time-dependent Force-free Pulsar Magnetospheres: Axisymmetric and Oblique Rotators,” *ApJ Lett.*, 648, L51-54
22. Contopoulos, I. and **Spitkovsky, A.** 2006, “Revised Pulsar Spindown,” *ApJ*, 643, 1139
23. Milosavljevic, M., Nakar, E., and **Spitkovsky, A.** 2006, “Steady-State Electrostatic Layers from Weibel Instability in Relativistic Collisionless Shocks,” *ApJ*, 637, 765
24. Skjaeraasen, O., Melatos, A., and **Spitkovsky, A.** 2005, “Particle-in-cell Simulations of a Nonlinear Transverse Electromagnetic Wave in a Pulsar Wind Termination Shock,” *ApJ*, 634, 542
25. Melatos, A., Scheltus, D., Whiting, M. T., Eikenberry, S. S., Romani, R. W., Rigaut, F., **Spitkovsky, A.**, Arons, J.; Payne, D. J. B. 2005, “Near-Infrared, Kilosecond Variability of the Wisps and Jet in the Crab Pulsar Wind Nebula”, *ApJ*, 633, 931
26. Moon, S., Wilks, S., Klein, R., Remington, B., Ryutov, D., MacKinnon, A., Patel, P, **Spitkovsky, A.** 2005, “A Neutron Star Atmosphere in the Laboratory With PetaWatt Lasers”, *Ap&SS*, 298, 293
27. **Spitkovsky, A.** and Arons, J. 2004, “Time-dependence in Relativistic Collisionless shocks: Theory of the Variable “Wisps” in the Crab Nebula,” *ApJ*, 603, 669
28. Kaspi, V. M., Ransom, S. M., Backer, D. C., Ramachandran, R., Demorest, P., Arons, J., **Spitkovsky, A.** 2004, “Green Bank Telescope Observations of the Eclipse of Pulsar “A” in the Double Pulsar Binary PSR J0737-3039,” *ApJ*, 613, L137
29. Demorest, P., Ramachandran, R., Backer, D. C., Kaspi, V. M., Ransom, S. M., Arons, J., **Spitkovsky, A.** 2004, “Orientations of Spin and Magnetic Dipole Axes of Pulsars in the J0737-3039 Binary Based on Polarimetry Observations at the Green Bank Telescope,” *ApJ*, 615, L137

30. **Spitkovsky, A.**, Levin Y. and Ushomirsky, G. 2002, “*Propagation of thermonuclear flames on rapidly rotating neutron stars: extreme weather during type I X-ray bursts,*” ApJ, 566, 101
31. **Spitkovsky, A.** and Chen, P. 2002, “*Longitudinal Laser Shaping in Laser Wakefield Accelerators*”, Phys. Lett. A, 296, 125
32. Chen, P., **Spitkovsky, A.**, Katsouleas, T., Mori, W. B. 1998, “*Transformer ratio and pulse shaping in laser wakefield accelerator,*” Nuclear Instruments and Methods A, 410, 488.
33. Chen, P., Ohgaki, P., **Spitkovsky, A.**, Takahashi, T., Yokoya, Y. 1997, “*Simulations of the interaction region in a photon-photon collider*”, Nuclear Instruments and Methods A, 397, 458.
34. Chen, P., **Spitkovsky, A.**, Weidemann, A. W. 1996, “*Beam-beam disruption and the case for a plasma lens in e^-e^- collisions,*” Int. J. Mod. Phys. A, 11, 1687.

Papers in press:

1. **Spitkovsky, A.** 2011, “*Current Models of Pulsar Magnetospheres,*” in book “*High Energy Emission from Pulsars,*” eds. N. Rea and D. Torres, (Springer)
2. Li, J., **Spitkovsky, A.** & Tchekhovskoy, A. “*Resistive Solutions for Pulsar Magnetospheres,*” submitted to ApJ, arXiv:1107.0979
3. Sironi, L. & **Spitkovsky, A.** “*Acceleration of Particles at the Termination Shock of a Relativistic Striped Wind,*” submitted to ApJ, arXiv:1107.0977
4. Gargate, L. & **Spitkovsky, A.** “*Ion acceleration in non-relativistic astrophysical shocks,*” submitted to ApJ, arXiv:1107.0762

Papers in preparation:

1. **Spitkovsky, A.** “*Astrophysical Relativistic Shocks,*” Annual Reviews of Astronomy & Astrophysics article
2. **Spitkovsky, A.** “*Kinetic Simulations of Magnetorotational Instability*”
3. Sironi, L., **Spitkovsky, A.**, & Gedalin, M. “*Mechanism of Electron Heating in Relativistic Collisionless Shocks*”
4. Belyaev, M. & **Spitkovsky, A.** “*Evolution of Electrospheres of Neutron Stars*”
5. **Spitkovsky A.** & Arons, J., “*Internal Structure of Relativistic Collisionless Shocks*”
6. **Spitkovsky, A.** and Ushomirsky G., “*Dynamics of circulation flows in neutron star ocean during type I X-ray bursts*”

Conference proceedings and reports:

1. Uzdensky, D., Arons, J., Balbus, S., Blackman, E., Goodman, J., Medvedev, M., **Spitkovsky, A.**, Stone, J. 2010, “*Life Cycles of Magnetic Fields in Stellar Evolution*,” Astro 2010 Science White Paper, no. 303, arXiv:0902.3589
2. Lai, D., van Kerkwijk, M., Arons, J., Beloborodov, A., Brown, E., Cordes, J., Harding, A., Kaspi, V., Kulkarni, S., Lorimer, D., Mclaughlin, M., Romani, R., **Spitkovsky, A.**, Strohmayer, T. 2010, “*Extreme Astrophysics with Neutron Stars*,” Astro 2010 Science White Paper, no. 170, arXiv:0902.3821
3. Bai, X. & **Spitkovsky, A.** 2009, “*Modeling Pulsar Gamma-Ray Light Curves Using Realistic Magnetospheric Geometries*,” Proceedings of the 10th Asian-Pacific Regional IAU Meeting, arXiv:0911.0120
4. Medvedev, M. & **Spitkovsky, A.** 2009, “*Whence particle acceleration*,” proceedings of meeting “Next Decade of GRB afterglows,” arXiv:0906.1087
5. **Spitkovsky, A.** 2008 “*Pulsar Magnetosphere: the Incredible Machine*,” AIP Conf Proc., 983, 20
6. Contopoulos I. & **Spitkovsky A.** 2006 “*Modified Pulsar Spindown*,” AIP Conf. Proc., 848, 301
7. **Spitkovsky A.** 2005, “*Relativistic collisionless shocks: shock structure and particle acceleration*,” in “Astrophysical Sources of High Energy Particles and Radiation”, AIP Conf. Proc., 801, 345, astro-ph/0603211
8. **Spitkovsky A.** 2005, “*Pulsar electrodynamics: a time-dependent view*,” in “Astrophysical Sources of High Energy Particles and Radiation”, AIP Conf. Proc., 801, 253, astro-ph/0603212
9. Arons, J., Backer D., **Spitkovsky, A.**, Kaspi, V. 2005, “*Probing Relativistic Winds: The case of PSR J0737-3039 A & B*,” in “Binary Radio Pulsars”, ASP Conf Series, 328, 95, astro-ph/0404159
10. **Spitkovsky, A.** 2004, “*Electrodynamics of Pulsar Magnetospheres*”, in IAU Symposium 218, 357, astro-ph/0310731
11. **Spitkovsky, A.** and Arons, J. 2002, “*Simulations of pulsar wind formation*,” ASP Conf. Proc., 271, 81, astro-ph/0201360
12. **Spitkovsky, A.** and Arons, J. 2000, “*Time-variability of the Crab Nebula wisps*,” ASP Conf. Proc., 202, 507
13. **Spitkovsky, A.** and Chen, P., “*Laser shaping and optimization of the laser-plasma interaction*”, 2001, AIP Conf. Proc., 569, 183, physics/0008027

14. Chen, P. and **Spitkovsky, A.**, “Optimal laser pulse shaping in laser wakefield accelerators,” 1999, AIP Conf. Proc., 472, 321
15. Chen, P., **Spitkovsky, A.** and Tajima, T. “Unruh radiation from time-varying acceleration in ultra-intense lasers,” 1999, Quantum Aspects of Beam Physics, World Scientific, 634.

Popular publications about my research:

1. Levin, A. 2010, “Cosmic Magnetism,” Popular Mechanics (Russian edition), November issue, p. 15
2. Levin, A. 2010, “In the Ocean of Plasma,” Popular Mechanics (Russian edition), May issue, p. 39
3. Cover of NRC report “Plasma 2010. Plasma Science: Advancing Knowledge in the National Interest,” 2007, (National Academies Press)
4. Johnston, L. R. 2004, “Binary Pulsar Spins Up a Storm,” Sky and Telescope, September 2004, 9
5. The Institute Letter (cover), Summer 2003 issue, Institute for Advanced Study, Princeton, NJ
6. Irion, R. 2002, “Ashes to Ashes: The Inner Lives of Neutron Stars,” Science Magazine, 297, 2199