Michael Musty — Publications

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Publications in Progress

38. McNees, R. **Stein, L. C.**, (2018) *Cosmological perturbations in dynamical Chern-Simons.*

Submitted Publications

37. Okounkova, M., **Stein, L. C.**, Scheel, M. A., Teukolsky, S. A., (2019) *Numerical binary black hole collisions in dynamical Chern-Simons gravity*, [arXiv:1906.08789].
36. Varma, V, *et al.* (2019) *Surrogate models for precessing binary black hole simulations with unequal masses*, [arXiv:1905.09300].
35. Boyle, M., *et al.* (**LCS** is corresponding author) (2019) *The SXS Collaboration catalog of binary black hole simulations*, [arXiv:1904.04831].

Collaboration Publications

From 2008–2012, I was coauthor on 34 refereed LIGO and/or LIGO/Virgo collaboration publications. The short author-list publications appear below.

Refereed Publications

34. Barack, L., *et al.* (2019) *Black holes, gravitational waves and fundamental physics: a roadmap*, Class. Quantum Grav. **36** 143001 [arXiv:1806.05195].
33. Varma, V., **Stein, L. C.**, Gerosa, D., (2019) *The binary black hole explorer: on-the-fly visualizations of precessing binary black holes*, Class. Quantum Grav. **36** 095007 [arXiv:1811.06552], [project website].
32. Varma, V., Gerosa, D., **Stein, L. C.**, Hébert, F., Zhang, H., (2019) *High-accuracy mass, spin, and recoil predictions of generic black-hole merger remnants*, Phys. Rev. Lett. **122**, 011101 [arXiv:1809.09125].
31. Isi, M., **Stein, L. C.** (2018) *Measuring stochastic gravitational-wave energy beyond general relativity*, Phys. Rev. D **98**, 104025 [arXiv:1807.02123].
30. Prabhu, K., **Stein, L. C.** (2018) *Black hole scalar charge from a topological horizon integral in Einstein-dilaton-Gauss-Bonnet gravity*, Phys. Rev. D **98**, 021503(R) (Rapid Communication) [arXiv:1805.02668].
29. Gerosa, D., Hébert, F., **Stein, L. C.** (2018) *Black-hole kicks from numerical-relativity surrogate models*, Phys. Rev. D **97**, 104049 [arXiv:1802.04276].
28. Chen, B., **Stein, L. C.** (2018) *Deformation of extremal black holes from stringy interactions*, Phys. Rev. D **97**, 084012 [arXiv:1802.02159].
27. Chen, B., **Stein, L. C.** (2017) *Separating metric perturbations in near-horizon extremal Kerr*, Phys. Rev. D **96**, 064017 [arXiv:1707.05319]
26. Okounkova, M., **Stein, L. C.**, Scheel, M. A., Hemberger, D. A. (2017) *Numerical binary black hole mergers in dynamical Chern-Simons: I. Scalar field*, Phys. Rev. D **96**, 044020 [arXiv:1705.07924]
25. Tso, R., Isi, M., Chen, Y., **Stein, L. C.** (2017) *Modeling the Dispersion and Polarization Content of Gravitational Waves for Tests of General Relativity*, CPT and Lorentz Symmetry: pp. 205–208 [arXiv:1608.01284]
24. McNees, R., **Stein, L. C.**, Yunes, N. (2016) *Extremal Black Holes in Dynamical Chern-Simons Gravity*, Class. Quantum Grav. **33** 235013 [arXiv:1512.05453]
23. Flanagan, É. É., Nichols, D. A., **Stein, L. C.**, Vines, J. (2016) *Prescriptions for Measuring and Transporting Local Angular Momenta in General Relativity*, Phys. Rev. D **93**, 104007 [arXiv:1602.01847]
22. Yagi, K., **Stein, L. C.** (2016) *Black Hole Based Tests of General Relativity*, Class. Quantum Grav. **33** 054001 [arXiv:1602.02413]

21. Yagi, K., **Stein, L. C.**, Yunes, N. (2016) *Challenging the Presence of Scalar Charge and Dipolar Radiation in Binary Pulsars*, Phys. Rev. D **93** 024010 [arXiv:1510.02152]
20. Berti, E., (5 authors), **Stein, L. C.**, (46 more authors) (2015) *Testing General Relativity with Present and Future Astrophysical Observations*, Class. Quantum Grav. **32** 243001 [arXiv:1501.07274]
19. Tsang, D., Galley, C. R., **Stein, L. C.**, Turner, A. (2015) *"Slimplectic" Integrators: Variational Integrators for General Nonconservative Systems*, ApJ **809** L9 [arXiv:1506.08443]
18. Yagi, K., **Stein, L. C.**, Pappas, G., Yunes, N., Apostolatos, T. (2014) *Why I-Love-Q: Explaining why universality emerges in compact objects*, Phys. Rev. D **90** 063010 [arXiv:1406.7587]
17. **Stein, L. C.** (2014) *Rapidly rotating black holes in dynamical Chern-Simons gravity: Decoupling limit solutions and breakdown*, Phys. Rev. D **90** 044061 [arXiv:1407.2350]
16. **Stein, L. C.**, Yagi, K., Yunes, N. (2014) *Three-Hair Newtonian Relations for Rotating Stars*, ApJ **788** 15 [arXiv:1312.4532]
15. **Stein, L. C.**, Yagi, K. (2013) *Parameterizing and constraining scalar corrections to general relativity*, Phys. Rev. D **89** 044026 [arXiv:1310.6743]
14. Yagi, K., **Stein, L. C.**, Yunes, N., Tanaka, T. (2013) *Isolated and Binary Neutron Stars in Dynamical Chern-Simons Gravity*, Phys. Rev. D **87** 084058 [arXiv:1302.1918]
13. Yagi, K., **Stein, L. C.**, Yunes, N., Tanaka, T. (2012), *Post-Newtonian, Quasi-Circular Binary Inspirals in Quadratic Modified Gravity*, Phys. Rev. D **85** 064022 [arXiv:1110.5950]
12. Vigeland, S., Yunes, N., **Stein, L. C.** (2011), *Bumpy black holes in alternative theories of gravity*, Phys. Rev. D **83** 104027 [arXiv:1102.3706]
11. Yunes, N., **Stein, L. C.** (2011), *Nonspinning black holes in alternative theories of gravity*, Phys. Rev. D **83** 104002 [arXiv:1101.2921]
10. **Stein, L. C.**, Yunes, N. (2011), *Effective gravitational wave stress-energy tensor in alternative theories of gravity*, Phys. Rev. D **83** 064038 [arXiv:1012.3144]
9. Lutomirski, A., Tegmark, M., Sanchez, N. J., **Stein, L. C.**, Urry, W. L., Zaldarriaga, M. (2011), *Solving the corner-turning problem for large interferometers*, MNRAS **410** 2075 [arXiv:0910.1351]
8. Sutton, P., Jones, G., Chatterji, S., Kalmus, P., Leonor, I., Poprocki, S., Rollins, J., Searle, A., **Stein, L.**, Tinto, M., Was, M. (2010), *X-Pipeline: an analysis package for autonomous gravitational-wave burst searches*, New J. Phys. **12** 053034 [arXiv:0908.3665]
7. Chatterji, S., Lazzarini, A., **Stein, L.**, Sutton, P., Searle, A. (2006), *Coherent network analysis technique for discriminating gravitational-wave bursts from instrumental noise*, Phys. Rev. D **74** 082005 [arXiv:gr-qc/0605002]

Unrefereed Publications

6. Galley, C. R., Tsang, D., **Stein, L. C.** (2014) *The principle of stationary nonconservative action for classical mechanics and field theories*, [arXiv:1412.3082]
5. **Stein, L. C.** (2014), *Note on Legendre decomposition of the Pontryagin density in Kerr*, [arXiv:1407.0744]
4. **Stein, L. C.** (2012), *Probes of Strong-field Gravity*, Ph.D. thesis at Massachusetts Institute of Technology [hdl:1721.1/77256]
3. Betancourt, M., **Stein, L. C.** (2011) *The Geometry of Hamiltonian Monte Carlo*, [arXiv:1112.4118]
2. **Stein, L. C.** (2009), *Binary Inspiral Gravitational Waves from a Post-Newtonian Expansion*, Contribution to the Wolfram Demonstrations Project, `http://demonstrations.wolfram.com/BinaryInspiralGravitationalWavesFromAPostNewtonianExpansion/`
1. **Stein, L. C.** (2006), *Gravitational Wave Burst Source Localization in a Coherent Network Analysis*, Senior thesis at California Institute of Technology