Publications of Hal M. Haggard

PUBLICATIONS IN PEER REVIEWED JOURNALS

(1575+ citations; Note that not all papers appear on INSPIRE since I also work in semiclassics and astrophysics.)

1. P. Donà, H. M. Haggard, C. Rovelli, F. Vidotto, *Tunneling of quantum geometries in spin-foams*, PRD **Accepted May** (2024) [arXiv:2402.09038].

2. M. Bruna, N. B. Cowan, J. Sheffler, H. M. Haggard, A. Bourdon, M. Mâlin, *Combining photometry and astrometry to improve orbit retrieval of directly imaged exoplanets*, MNRAS **519** (2023) DOI:10.1093/mnras/stac3521. 1 citation.

3. S. K. Asante, B. Dittrich, H. M. Haggard, *Discrete gravity dynamics from effective spin foams*, Class. Quant. Grav. **38** (2021) DOI:10.1088/1361-6382/ac011b. 36 citations.

4. S. K. Asante, B. Dittrich, and H. M. Haggard, *Effective Spin Foam Models for Four-Dimensional Quantum Gravity*, Phys. Rev. Lett. **125**, 231301 (2020) DOI: 10.1103/PhysRevLett.125.231301. 57 citations.

5. H. M. Haggard, M. Han, W. Kamiński, and A. Riello, *SL(2, C) Chern-Simons Theory, Flat Connections, and Four-dimensional Quantum Geometry,* Advances in Theoretical and Mathematical Physics **23**, 1067 (2019) DOI: 10.4310/ATMP.2019.v23.n4.a3. 33 citations.

6. S. K. Asante, B. Dittrich, and H. M. Haggard, *Holographic description of boundary gravitons in (3+1) dimensions,* J. High Energ. Phys. **144** (2019) DOI:10.1007/JHEP01(2019)144. 11 citations.

7. E. Bianchi and H. M. Haggard, *Spin fluctuations and black hole singularities: the onset of quantum gravity is spacelike,* New J. Phys. **20** (2018). DOI:10.1088/1367-2630/aae71d. 6 citations.

8. E. Bianchi, M. Christodoulou, F. D'Ambrosio, H. M. Haggard, and C. Rovelli, *White Holes as Remnants: A Surprising Scenario for the End of a Black Hole,* Class. Quant. Grav. **35** (2018) DOI:10.1088/1361-6382/aae550. 152 citations.

9. B. Farr, W. M. Farr, N. B. Cowan, H. M. Haggard, and T. Robinson, `exocartographer`*: A Bayesian Framework for Mapping Exoplanets in Reflected Light,* AJ **156**, (2018) DOI:10.3847/1538-3881/aad775. 36 citation.

10. S. K. Asante, B. Dittrich, and H. M. Haggard, *The Degrees of Freedom of Area Regge Calculus: Dynamics, Non-metricity, and Broken Diffeomorphisms,* Class. Quant. Grav. **35**, 135009 (2018) DOI:10.1088/1361-6382/aac588. 28 citations.
[Featured on CQGPlus due to high quality referee rating]

11. H. M. Haggard and N. B. Cowan, *Analytic Reflected Lightcurves for Exoplanets,* MNRAS **478**, 371 (2018) DOI:10.1093/mnras/sty1019. 13 citations.

12. E. Bianchi, H. M. Haggard, and C. Rovelli, *The boundary is mixed,* Gen. Relativ. Gravit. **49**, 100 (2017) DOI:10.1007/s10714-017-2263-2. 10 citations.

13. N. B. Cowan, V. Chayes, É. Bouffard, M. Meynig, and H. M. Haggard, *Odd Harmonics in Exoplanet Photometry: Weather or Artifact?,* MNRAS **467**, 747 (2017) DOI:10.1093/mnras/stx133. 23 citations.

14. H. M. Haggard and C. Rovelli, *Quantum Gravity Effects around Sagittarius A*,* Int. J. Mod. Phys. D **25**, 1644021 (2016) DOI: 10.1142/S0218271816440211. 29 citations. [Honorable mention, Gravity Research Foundation contest]

15. J. C. Schwartz, C. Sekowski, H. M. Haggard, E. Pallé, and N. B. Cowan, *Inferring Planetary Obliquity Using Rotational & Orbital Photometry,* MNRAS **457**, 926 (2016) DOI: 10.1093/mnras/stw068. 48 citations.

16. H. M. Haggard, M. Han, W. Kamiński, and A. Riello, *Four-dimensional Quantum Gravity with a Cosmological Constant from Three-dimensional Holomorphic Blocks,* Phys. Lett. B **752**, 258 (2016) DOI: 10.1016/j.physletb.2015.11.058. 65 citations.

17. H. M. Haggard, M. Han, and A. Riello, *Encoding Curved Tetrahedra in Face Holonomies: a Phase Space of Shapes from Group-Valued Moment Maps,* Annales Henri Poincaré (2016) DOI: 10.1007/s00023-015-0455-4. 59 citations.

18. H. M. Haggard and C. Rovelli, *Quantum-gravity effects outside the horizon spark black to white hole tunneling,* Phys. Rev. D **92**, 104020 (2015) DOI: 10.1103/PhysRevD.92.104020. 293 citations.

19. H. M. Haggard and C. Rovelli, *Black to white hole tunneling: An exact classical solution,* Int. J. Mod. Phys. A **30**, 1545015 (2015) DOI: 10.1142/S0217751X15450153. 20 citations.

20. H. M. Haggard, M. Han, W. Kamiński, and A. Riello, *SL(2,C) Chern-Simons Theory, a non-Planar Graph Operator, and 4D Quantum Gravity with a Cosmological Constant: Semiclassical Geometry,* Nucl. Phys. B **900**, 1 (2015) DOI: 10.1016/j.nuclphysb.2015.08.023. 89 citations.

21. H. M. Haggard, A. Hedeman, E. Kur, and R. G. Littlejohn, *Symplectic and semiclassical aspects of the Schläfli identity,* J. Phys. A: Math. Theor. **48**, 105203 (2015) DOI: 10.1088/1751-8113/48/10/105203. 19 citations.

22. I. Esterlis, H. M. Haggard, A. Hedeman, and R. G. Littlejohn, *Maslov indices, Poisson brackets, and singular differential forms,* Europhys. Lett. **106**, 50002 (2014) DOI: 10.1209/0295-5075/106/50002. 11 citations. [selected as Editor's Choice and 2014 EPL highlight]

23. G. Chirco, H. M. Haggard, A. Riello, and C. Rovelli, *Spacetime thermodynamics without hidden degrees of freedom,* Phys. Rev. D **90**, 044044 (2014) DOI: 10.1103/PhysRevD.90.044044. 46 citations.

24. G. Chirco, H. M. Haggard, and C. Rovelli, *Coupling and thermal equilibrium in general-covariant systems,* Phys. Rev. D **88**, 084027 (2013) DOI: 10.1103/PhysRevD.88.084027. 19 citations.

25. H. M. Haggard and C. Rovelli, *Essay on gravitation: Death and resurrection of the zeroth principle of thermodynamics,* Int. J. Mod. Phys. D **22**, 1342007 (2013) DOI: 10.1142/S0218271813420078. 5 citations. [Honorable mention, Gravity Research Foundation contest]

26. N. B. Cowan, P. A. Fuentes, and H. M. Haggard, *Lightcurves of stars & exoplanets: estimating inclination, obliquity, and albedo,* MNRAS **434**, 2465 (2013) DOI: 10.1093/mnras/stt1191. 68 citations.

27. H. M. Haggard and C. Rovelli, *Death and resurrection of the zeroth principle of thermodynamics,* Phys. Rev. D **87**, 084001 (2013) DOI: 10.1103/PhysRevD.87.084001. 33 citations.

28. H. M. Haggard, *Pentahedral volume, chaos and quantum gravity,* Phys. Rev. D **87**, 044020 (2013) DOI: 10.1103/PhysRevD.87.044020. 25 citations.

29. H. M. Haggard, C. Rovelli, F. Vidotto, and W. Wieland, *Spin connection of twisted geometry,* Phys. Rev. D **87**, 024038 (2013) DOI: 10.1103/PhysRevD.87.024038. 32 citations.

30. E. Bianchi and H. M. Haggard, *Bohr-Sommerfeld quantization of space,* Phys. Rev. D **86**, 124010 (2012) DOI: 10.1103/PhysRevD.86.124010. 49 citations.

31. V. Aquilanti, H. M. Haggard, A. Hedeman, N. Jeevanjee, R. G. Littlejohn and L. Yu, *Semiclassical Mechanics of the Wigner 6j-symbol,* J. Phys. A: Math. Theor. **45**, 065209 (2012) DOI: 10.1088/1751-8113/45/6/065209. 65 citations.

32. E. Bianchi and H. M. Haggard, *Discreteness of the volume of space from Bohr-Sommerfeld quantization,* Phys. Rev. Lett. **107**, 011301 (2011) DOI: 10.1103/PhysRevLett.107.011301. 78 citations.

33. H. M. Haggard and R. G. Littlejohn, *Asymptotics of the Wigner 9j-symbol,* Class. Quant. Grav. **27**, 135010 (2010) DOI: 10.1088/0264-9381/27/13/135010. 38 citations.

34. V. Aquilanti, H. M. Haggard, R. G. Littlejohn and L. Yu, *Semiclassical Analysis of Wigner 3j-symbol,* J. Phys. A: Math. Theor. **40**, 5637 (2007) DOI: 10.1088/1751-8113/40/21/013. 55 citations.

DISSERTATION

1. H. M. Haggard, *Asymptotic Analysis of Spin Networks with Applications to Quantum Gravity* escholarship.org (May 2011). 14 citations.

PREPRINTS

1. E. Bianchi, A. Gupta, H. M. Haggard, and B. S. Sathyaprakash, *Small Spins of Primordial Black Holes from Random Geometries: Bekenstein-Hawking Entropy and Gravitational Wave Observations*, submitted to PRD. 6 citations. [Won 2nd prize 2019 Buchalter Cosmology Prize]