

THE PHYSICS OF KAGRA GRAVITATIONAL-WAVE DETECTOR

BIBLIOGRAPHY

1. COSMOLOGY AND ASTROPHYSICS WITH LIGO, VIRGO AND KAGRA
 - (1) *Prospects for Observing and Localizing Gravitational-Wave Transients with Advanced LIGO, Advanced Virgo and KAGRA*
LIGO Scientific Collaboration and Virgo Collaboration
[arXiv:1304.0670](https://arxiv.org/abs/1304.0670) [gr-qc]
 - (2) *GWTC-1: A Gravitational-Wave Transient Catalog of Compact Binary Mergers Observed by LIGO and Virgo during the First and Second Observing Runs*
LIGO Scientific Collaboration and Virgo Collaboration
[arXiv:1811.12907](https://arxiv.org/abs/1811.12907) [astro-ph.HE]
 - (3) *Binary Black Hole Population Properties Inferred from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo*
LIGO Scientific Collaboration and Virgo Collaboration
[arXiv:1806.00532](https://arxiv.org/abs/1806.00532) [astro-ph.IM]
 - (4) *Constraining Formation Models of Binary Black Holes with Gravitational-wave Observations*
M. Zevin, C. Pankow, C. L. Rodriguez, L. Sampson, E. Chase, V. Kalogera, and F. A. Rasio
The Astrophysical Journal, Volume 846, Number 1, 2017
DOI [10.3847/1538-4357/aa8408](https://doi.org/10.3847/1538-4357/aa8408)
 - (5) *Improving astrophysical parameter estimation via offline noise subtraction for Advanced LIGO*
J. C. Driggers, S. Vitale et al., (The LIGO Scientific Collaboration Instrument Science Authors)
[arXiv:1811.12940](https://arxiv.org/abs/1811.12940) [astro-ph.HE]
 - (6) *Using Spin to Understand the Formation of LIGO and Virgo's Black Holes*
B. Farr, D. E. Holz, and W. M. Farr
The Astrophysical Journal Letters, Volume 854, Number 1, 2018
DOI [10.3847/2041-8213/aaaa64](https://doi.org/10.3847/2041-8213/aaaa64)

- (7) *Illuminating black hole binary formation channels with spins in Advanced LIGO*
 C. L. Rodriguez, M. Zevin, C. Pankow, V. Kalogera, and F. A. Rasio
 The Astrophysical Journal Letters, Volume 832, Number 1, 2016
 DOI [10.3847/2041-8205/832/1/L2](https://doi.org/10.3847/2041-8205/832/1/L2)
- (8) *Accuracy of inference on the physics of binary evolution from gravitational-wave observations*
 J. W. Barrett, S. M. Gaebel, C. J. Neijssel, A. Vigna-Gómez, S. Stevenson, C. P. L. Berry, W. M. Farr and I. Mandel
 Monthly Notices of the Royal Astronomical Society, Volume 477, Issue 4, 2018,
 Pages 4685-4695
 DOI [10.1093/mnras/sty908](https://doi.org/10.1093/mnras/sty908)
- (9) *Where Are LIGO's Big Black Holes?*
 M. Fishbach, D. E. Holz
 The Astrophysical Journal Letters, Volume 851, Number 2, 2017
 DOI [10.3847/2041-8213/aa9bf6](https://doi.org/10.3847/2041-8213/aa9bf6)
- (10) *Does the Black Hole Merger Rate Evolve with Redshift?*
 M. Fishbach, D. E. Holz, and W. M. Farr
 The Astrophysical Journal Letters, Volume 863, Number 2, 2018
 DOI [10.3847/2041-8213/aad800](https://doi.org/10.3847/2041-8213/aad800)
- (11) *GW170817: Measurements of Neutron Star Radii and Equation of State*
 LIGO Scientific Collaboration and Virgo Collaboration
 Physical Review Letters, Volume 121, Issue 16, 2018
 DOI [10.1103/PhysRevLett.121.161101](https://doi.org/10.1103/PhysRevLett.121.161101)
- (12) *A 2 per cent Hubble constant measurement from standard sirens within 5 years*
 H. Chen, M. Fishbach, D. E. Holz
 Nature, Volume 562, 2018, Pages 545-547
 DOI [10.1038/s41586-018-0606-0](https://doi.org/10.1038/s41586-018-0606-0)
- (13) *A standard siren measurement of the Hubble constant from GW170817 without the electromagnetic counterpart*
 M. Fishbach et al.
[arXiv:1807.05667 \[astro-ph.CO\]](https://arxiv.org/abs/1807.05667)
- The complete list of detection papers can be found here:
www.ligo.caltech.edu/page/detection-companion-papers
 - The complete list of LIGO - Virgo publications can be found here:
www.ligo.caltech.edu/page/publications

2. AN UNDERGROUND DETECTOR

- (1) *Observations and modeling of seismic background noise*
J. R. Peterson
Open-File Report 93-322, 1993
DOI [10.3133/ofr93322](https://doi.org/10.3133/ofr93322)
- (2) *Microseismic studies of an underground site for a new interferometric gravitational wave detector*
L. Naticchioni, M. Perciballi, F. Ricci, E. Coccia, V. Malvezzi, F. Acernese, F. Barone, G. Giordano, R. Romano, M. Punturo, R. De Rosa, P. Calia, and G. Loddo
Classical and Quantum Gravity, Volume 31, Number 10, 2014
DOI [10.1088/0264-9381/31/10/105016](https://doi.org/10.1088/0264-9381/31/10/105016)
- (3) *Design and operation of a 1500-m laser strainmeter installed at an underground site in Kamioka, Japan*
A. Araya, A. Takamori, W. Morii, K. Miyo, M. Ohashi, K. Hayama, T. Uchiyama, S. Miyoki, and Y. Saito
Earth, Planets and Space, Volume 69, Number 1, 2017
DOI [10.1186/s40623-017-0660-0](https://doi.org/10.1186/s40623-017-0660-0)
- (4) *Ultrastable performance of an underground-based laser interferometer observatory for gravitational waves*
S. Sato, S. Miyoki, S. Telada, D. Tatsumi, A. Araya, M. Ohashi, Y. Totsuka, M. Fukushima, and M. Fujimoto (LISM Collaboration)
Physical Review D, Volume 69, Issue 10, 2004
DOI [10.1103/PhysRevD.69.102005](https://doi.org/10.1103/PhysRevD.69.102005)
- (5) *Detector configuration of KAGRA - the Japanese cryogenic gravitational-wave detector*
K. Somiya (for the KAGRA Collaboration)
Classical and Quantum Gravity, Volume 29, Number 12, 2012
DOI [10.1088/0264-9381/29/12/124007](https://doi.org/10.1088/0264-9381/29/12/124007)
- (6) *Einstein gravitational wave Telescope conceptual design study*
ET Science Team
<http://www.et-gw.eu/index.php/etdsdocument>

- (7) *Terrestrial gravitational noise on a gravitational wave antenna*
 P. R. Saulson
 Physical Review D, Volume 30, Issue 4, 1984
 DOI [10.1103/PhysRevD.30.732](https://doi.org/10.1103/PhysRevD.30.732)
- (8) *Implications of Dedicated Seismometer Measurements on Newtonian-Noise Cancellation for Advanced LIGO*
 M. W. Coughlin, J. Harms, J. Driggers, D. J. McManus, N. Mukund, M. P. Ross,
 B. J. J. Slagmolen and, K. Venkateswara
 Physical Review Letters, Volume 121, Issue 22, 2018
 DOI [10.1103/PhysRevLett.121.221104](https://doi.org/10.1103/PhysRevLett.121.221104)
- (9) *Impact of infrasound atmospheric noise on gravity detectors used for astrophysical and geophysical applications*
 D. Fiorucci, J. Harms, M. Barsuglia, I. Fiori, and F. Paoletti
 Physical Review D, Volume 97, Issue 6, 2018
 DOI [10.1103/PhysRevD.97.062003](https://doi.org/10.1103/PhysRevD.97.062003)
- (10) *Construction of KAGRA: an underground gravitational-wave observatory*
 The KAGRA Collaboration
 Progress of Theoretical and Experimental Physics, Volume 2018, Issue 1, 2018
 DOI [10.1093/ptep/ptx180](https://doi.org/10.1093/ptep/ptx180)
- (11) *Experiences with the underground facility for KAGRA Site*
 S. Miyoki
 GWADW 2018
<https://dcc.ligo.org/LIGO-G1801003>

3. A CRYOGENIC DETECTOR

- (1) *Thermal noise in mechanical experiments,*
 P. R. Saulson
 Physical Review D, Volume 42, Issue 8, 1990
 DOI [10.1103/PhysRevD.42.2437](https://doi.org/10.1103/PhysRevD.42.2437)
- (2) *Advanced Interferometers and the Search for Gravitational Waves: Lectures from the First VESF School on Advanced Detectors for Gravitational Waves*
 M. Bassan
 Springer, Astrophysics and Space Science Library, Volume 404, 2014
 DOI [10.1007/978-3-319-03792-9](https://doi.org/10.1007/978-3-319-03792-9)

- (3) *Fundamentals Of Interferometric Gravitational Wave Detectors (Second Edition)*
P. R. Saulson
World Scientific, 2017
DOI [10.1142/10116](https://doi.org/10.1142/10116)
- (4) *Internal thermal noise in the LIGO test masses: A direct approach*
Y. Levin
Physical Review D, Volume 57, Issue 2, 1998
DOI [10.1103/PhysRevD.57.659](https://doi.org/10.1103/PhysRevD.57.659)
- (5) *Progress on the cryogenic system for the KAGRA cryogenic interferometric gravitational wave telescope*
Y. Sakakibara, T. Akutsu, D. Chen, A. Khalaidovski, N. Kimura, S. Koike, T. Kume, K. Kuroda, T. Suzuki, C. Tokoku, and K. Yamamoto
Classical and Quantum Gravity, Volume 31, Number 22, 2014
DOI [10.1088/0264-9381/31/22/224003](https://doi.org/10.1088/0264-9381/31/22/224003)
- (6) *Cryogenic cooling of a sapphire mirror-suspension for interferometric gravitational wave detectors*
T. Uchiyama, D. Tatsumi, T. Tomaru, M. E. Tobar, K. Kuroda, T. Suzuki, N. Sato, A. Yamamoto, T. Haruyama, and T. Shintomi
Physics Letters A, Volume 242, Issues 4-5, 1998, Pages 211-214
DOI [10.1016/S0375-9601\(98\)00205-9](https://doi.org/10.1016/S0375-9601(98)00205-9)
- (7) *Development of a cryocooler vibration-reduction system for a cryogenic interferometric gravitational wave detector*
T. Tomaru, T. Suzuki, T. Haruyama, T. Shintomi, N. Sato, A. Yamamoto, Y. Ikushima, T. Koyama, and R. Li
Classical and Quantum Gravity, Volume 21, Number 5, 2004
DOI [10.1088/0264-9381/21/5/093](https://doi.org/10.1088/0264-9381/21/5/093)
- (8) *Reduction of thermal fluctuations in a cryogenic laser interferometric gravitational wave detector*
T. Uchiyama, S. Miyoki, S. Telada, K. Yamamoto, M. Ohashi, K. Agatsuma, K. Arai, M. Fujimoto, T. Haruyama, S. Kawamura, O. Miyakawa, N. Ohishi, T. Saito, T. Shintomi, T. Suzuki, R. Takahashi, and D. Tatsumi
Physical Review Letters, Volume 108, Issue 14, 2012
DOI [10.1103/PhysRevLett.108.141101](https://doi.org/10.1103/PhysRevLett.108.141101)

- (9) *Sapphire mirror for the KAGRA gravitational wave detector*
 E. Hirose, D. Bajuk, G. Billingsley, T. Kajita, B. Kestner, N. Mio, M. Ohashi, B. Reichman, H. Yamamoto, and L. Zhang
 Physical Review D, Volume 89, Issue 6, 2014
 DOI [10.1103/PhysRevD.89.062003](https://doi.org/10.1103/PhysRevD.89.062003)

4. SQUEEZED VACUUM TECHNIQUES

- (1) *Quantum-mechanical noise in an interferometer*
 C. M. Caves
 Physical Review D, Volume 23, Issue 8, 1981
 DOI [10.1103/PhysRevD.23.1693](https://doi.org/10.1103/PhysRevD.23.1693)
- (2) *Squeezed states of light and their applications in laser interferometers*
 R. Schnabel
 Physics Reports, Volume 684, 2017, Pages 1-51
 DOI [10.1016/j.physrep.2017.04.001](https://doi.org/10.1016/j.physrep.2017.04.001)
- (3) *Quantum squeezed light in gravitational-wave detectors*
 S. S. Y. Chua, B. J. J. Slagmolen, D. A. Shaddock, and D. E. McClelland
 Classical and Quantum Gravity, Volume 31, Number 18, 2014
 DOI [10.1088/0264-9381/31/18/183001](https://doi.org/10.1088/0264-9381/31/18/183001)
- (4) *Squeezed vacuum states of light for gravitational wave detectors*
 L. Barsotti, J. Harms, and R. Schnabel
 Reports on Progress in Physics, Volume 82, Number 1, 2018
 DOI [10.1088/1361-6633/aab906](https://doi.org/10.1088/1361-6633/aab906)
- (5) *Enhanced sensitivity of the LIGO gravitational wave detector by using squeezed states of light*
 The LIGO Scientific Collaboration
 Nature Photonics, Volume 7, Pages 613-619, 2013
 DOI [10.1038/nphoton.2013.177](https://doi.org/10.1038/nphoton.2013.177)
- (6) *Realistic Filter Cavities for Advanced Gravitational Wave Detectors*
 M. Evans, L. Barsotti, J. Harms, P. Kwee, and H. Miao
 Physical Review D, Volume 88, Issue 2, 2013
 DOI [10.1103/PhysRevD.88.022002](https://doi.org/10.1103/PhysRevD.88.022002)

- (7) *Audio-Band Frequency-Dependent Squeezing for Gravitational-Wave Detectors*
E. Oelker, T. Isogai, J. Miller, M. Tse, L. Barsotti, N. Mavalvala, and M. Evans
Physical Review Letters, Volume 116, Issue 4, 2016
DOI [10.1103/PhysRevLett.116.041102](https://doi.org/10.1103/PhysRevLett.116.041102)
- (8) *Estimation of losses in a 300 m filter cavity and quantum noise reduction in the KAGRA gravitational-wave detector*
E. Capocasa, M. Barsuglia, J. Degallaix, L. Pinard, N. Straniero, R. Schnabel, K. Somiya, Y. Aso, D. Tatsumi, and R. Flaminio
Physical Review D, Volume 93, Issue 8, 2016
DOI [10.1103/PhysRevD.93.082004](https://doi.org/10.1103/PhysRevD.93.082004)
- (9) *Measurement of optical losses in a high-finesse 300 m filter cavity for broadband quantum noise reduction in gravitational-wave detectors*
E. Capocasa, Y. Guo, M. Eisenmann, Y. Zhao, A. Tomura, K. Arai, Y. Aso, M. Marchiò, L. Pinard, P. Prat, K. Somiya, R. Schnabel, M. Tacca, R. Takahashi, D. Tatsumi, M. Leonardi, M. Barsuglia, and R. Flaminio
Physical Review D, Volume 98, Issue 2, 2018
DOI [10.1103/PhysRevD.98.022010](https://doi.org/10.1103/PhysRevD.98.022010)
- (10) *Proposal for Gravitational-Wave Detection Beyond the Standard Quantum Limit via EPR Entanglement*
Y. Ma, H. Miao, B. Heyun Pang, M. Evans, C. Zhao, J. Harms, R. Schnabel, and Y. Chen
Nature Physics, Volume 13, Pages 776-780, 2017
DOI [10.1038/nphys4118](https://doi.org/10.1038/nphys4118)
- (11) *Broadband sensitivity enhancement of detuned dual-recycled Michelson interferometers with EPR entanglement*
D. D. Brown, H. Miao, C. Collins, C. Mow-Lowry, D. Toyra, and A. Freise
Physical Review D, Volume 96, Issue 6, 2017
DOI [10.1103/PhysRevD.96.062003](https://doi.org/10.1103/PhysRevD.96.062003)
- Space-Time (a game to build your own GW detector):
<https://www.laserlabs.org/spacetimequest.php>