
MONTANA
STATE UNIVERSITY
extreme Gravity Institute

extreme Gravity Institute

Neil Cornish

- Gravitational Wave Astronomy

New Hire

- Gravitational Wave Astronomy

Anne Lohfink

- Black Hole accretion disk & jets

Amy Reines

- Black Hole hunter

Bennett Link

- Neutron star structure

Montana State Gravity Group: Postdocs & Students

Postdocs

Remya Nair

Cosmology
Testing GR

Matthew Digman

Cosmology
LISA

Grad students

Bence Becsy

NanoGrav
LIGO

Toral Gupta

Neutron Stars
BayesWave

Kevin Schuman

LISA
Black Hole detection

Nic Pichette

LIGO
Time-Frequency

Kate Downey

Michael Testagrossa

Grace Fiacco

Sudhi Mathur

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lisa

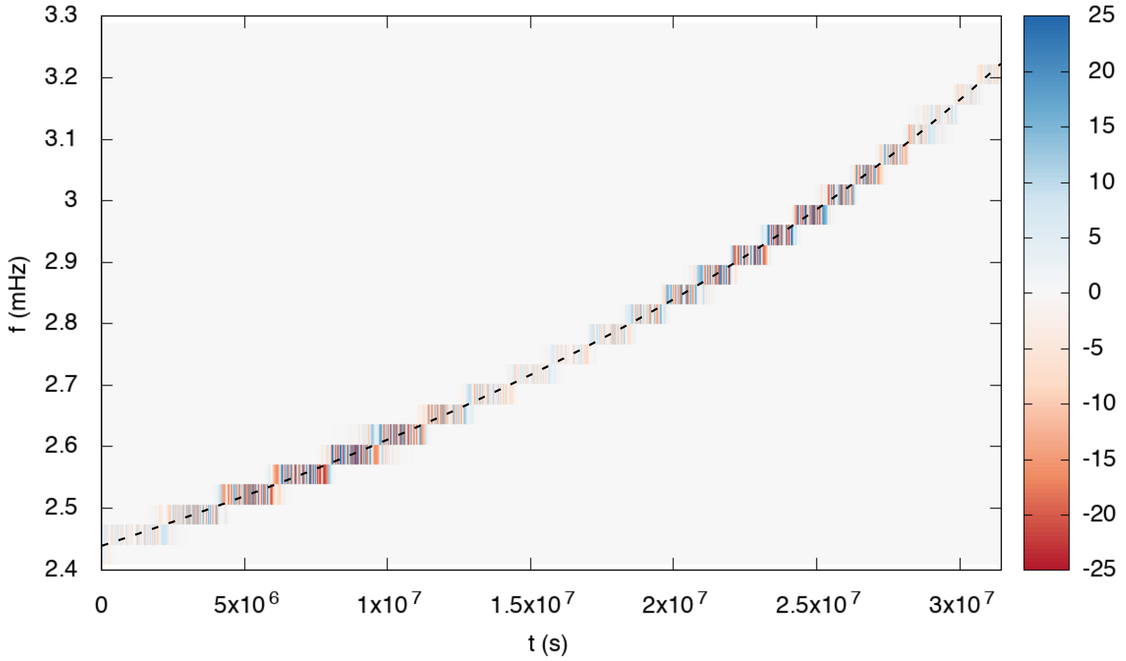
LISA
CONSORTIUM

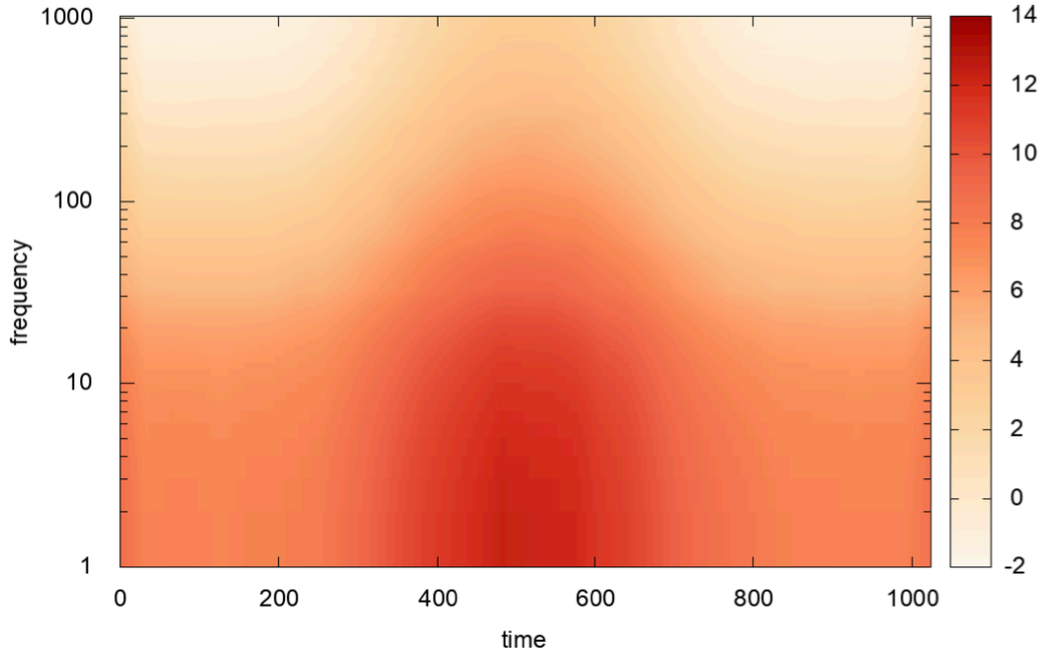
Pan-spectral gravitational wave astronomy

Montana State Gravity Group: Recent Highlights

Time-Frequency Analysis of Gravitational Wave Data

Cornish DOI 10.1103/PhysRevD.102.124038

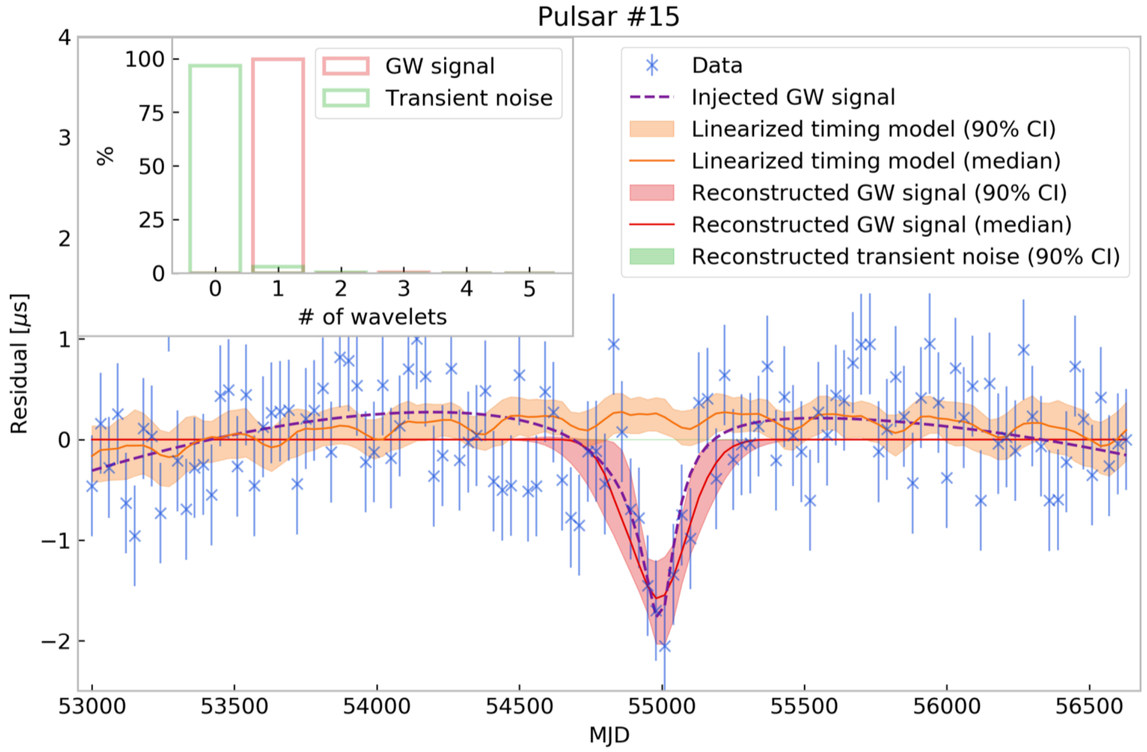


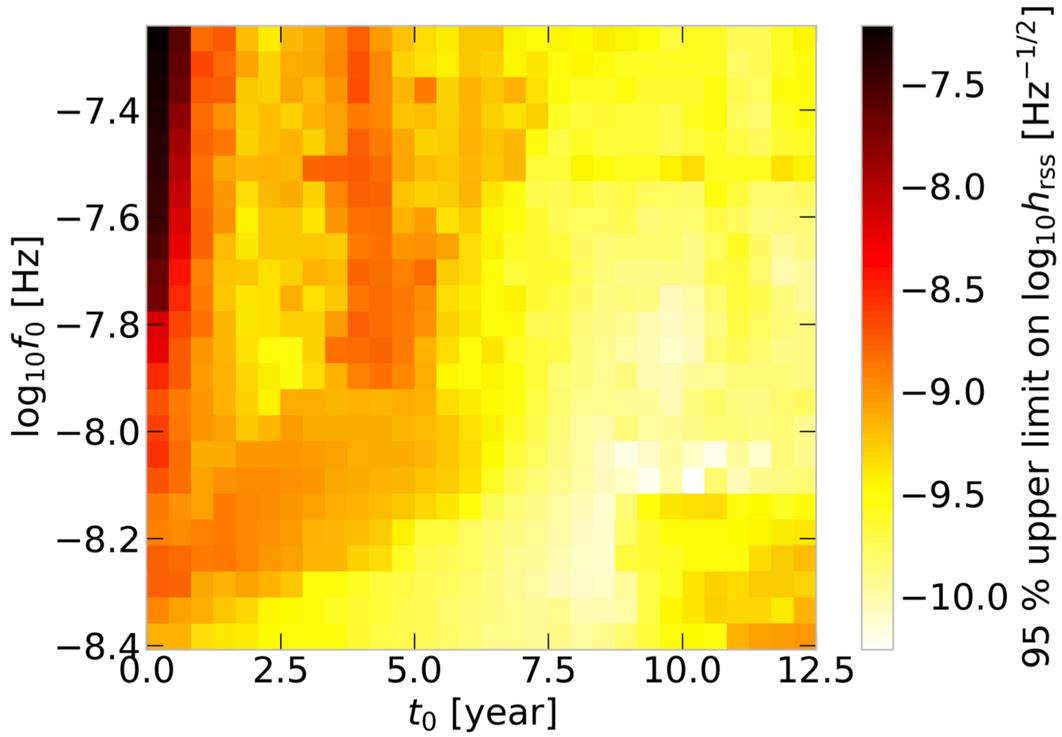


Montana State Gravity Group: Recent Highlights

Bayesian search for gravitational wave bursts in pulsar timing array data

Becsy & Cornish DOI 10.1088/1361-6382/abf1c6





Montana State Gravity Group: Recent Highlights

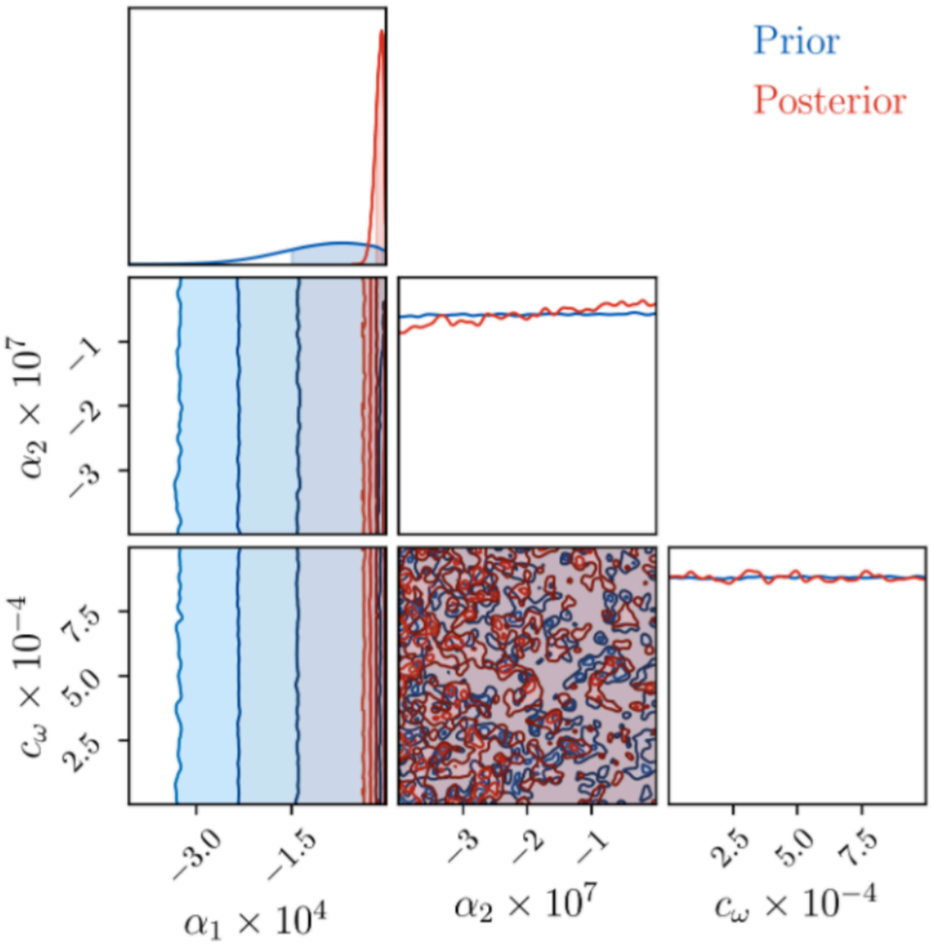
Updated Binary Pulsar Constraints on Einstein-aether Theory in Light of Gravitational Wave Constraints on the Speed of Gravity

Gupta et al. eprint 2104.04596

$$S = -\frac{1}{16\pi G}\int \Big[R + \frac{1}{3}c_\theta\theta^2 + c_\sigma\sigma_{\mu\nu}\sigma^{\mu\nu} + c_\omega\omega_{\mu\nu}\omega^{\mu\nu} + c_a A_\mu A^\mu + \lambda(U^\mu U_\mu - 1)\Big]\sqrt{-g}\, d^4x + S_{\rm mat}(\psi, g_{\mu\nu}),$$

$$\alpha_1 = 4\frac{c_\omega(c_a - 2c_\sigma) + c_a c_\sigma}{c_\omega(c_\sigma - 1) - c_\sigma},$$

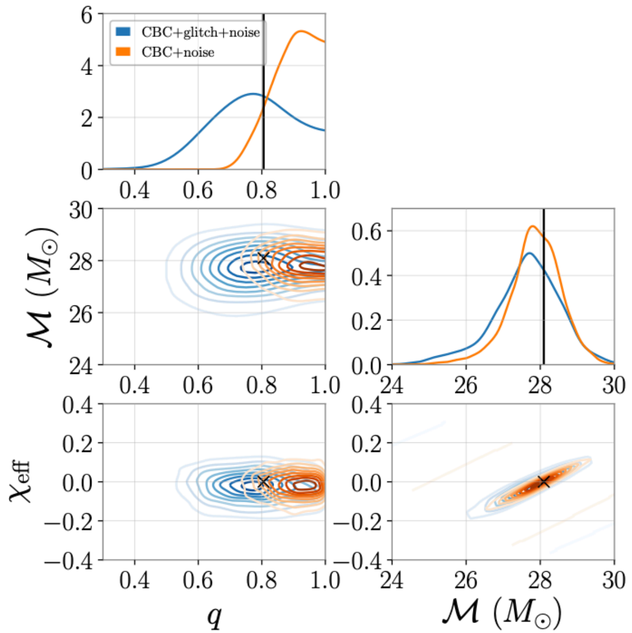
$$\alpha_2 = \frac{\alpha_1}{2} + \frac{3(c_a - 2c_\sigma)(c_\theta + c_a)}{(2 - c_a)(c_\theta + 2c_\sigma)}.$$

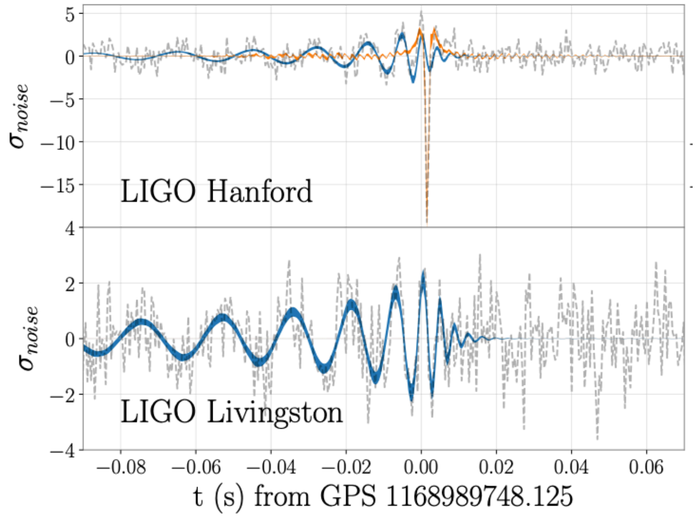


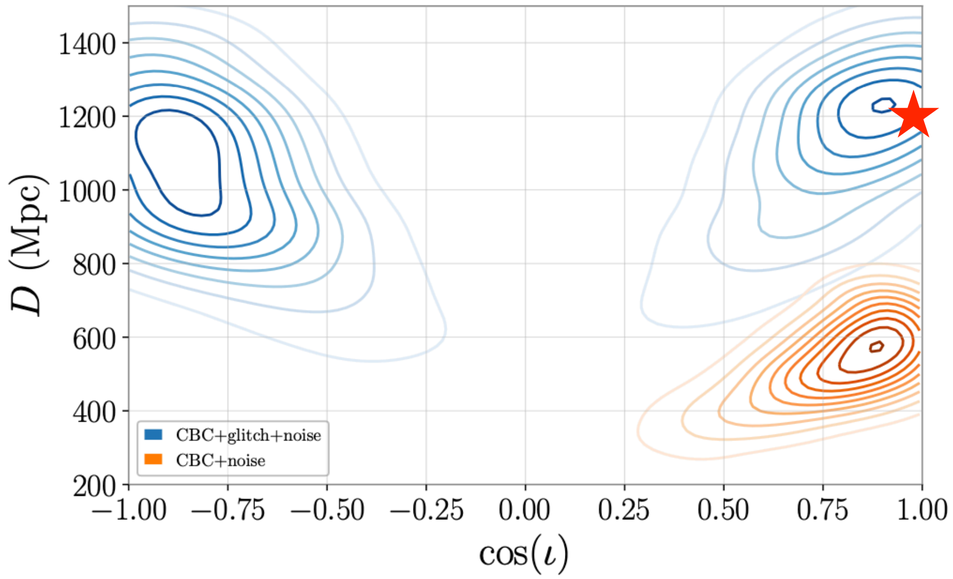
Montana State Gravity Group: Recent Highlights

Modeling compact binary signals and instrumental glitches in gravitational wave data

Chatziioannou, Cornish et al. DOI 10.1103/PhysRevD.103.044013







Montana State Gravity Group: Recent Highlights

Rapid and Robust Parameter Inference for Binary Mergers

Cornish DOI 10.1103/PhysRevD.103.104057