

Testing Modified Gravity Models by Gravitational Wave Observation

Emre Onur Kahya

Department of Physics, University of Florida, Gainesville, Florida

Collaborators : Shantanu Desai (Penn State), Richard Woodard (UF)

SUMMARY

- *Multiple metric theories is a generic property due to No-Go theorem*
- *In any such model, gravity waves follow a different geodesic from that of other massless particles.*
- *This gives rise to, even at this stage, decisive tests. Possibility of incredible, doable and model independent tests of simultaneous detection of optical pulses (or neutrinos) and gravitational waves.*
- *If Modified Gravity Models are correct, time lag between neutrinos (or optical pulse) and gravitational waves from 1987A is at the order of days and for GRB 070201 approximately 2 years.*
- *Gravitational Waves can also be used to test GR+DM in the ultra weak field / long distance regime.*

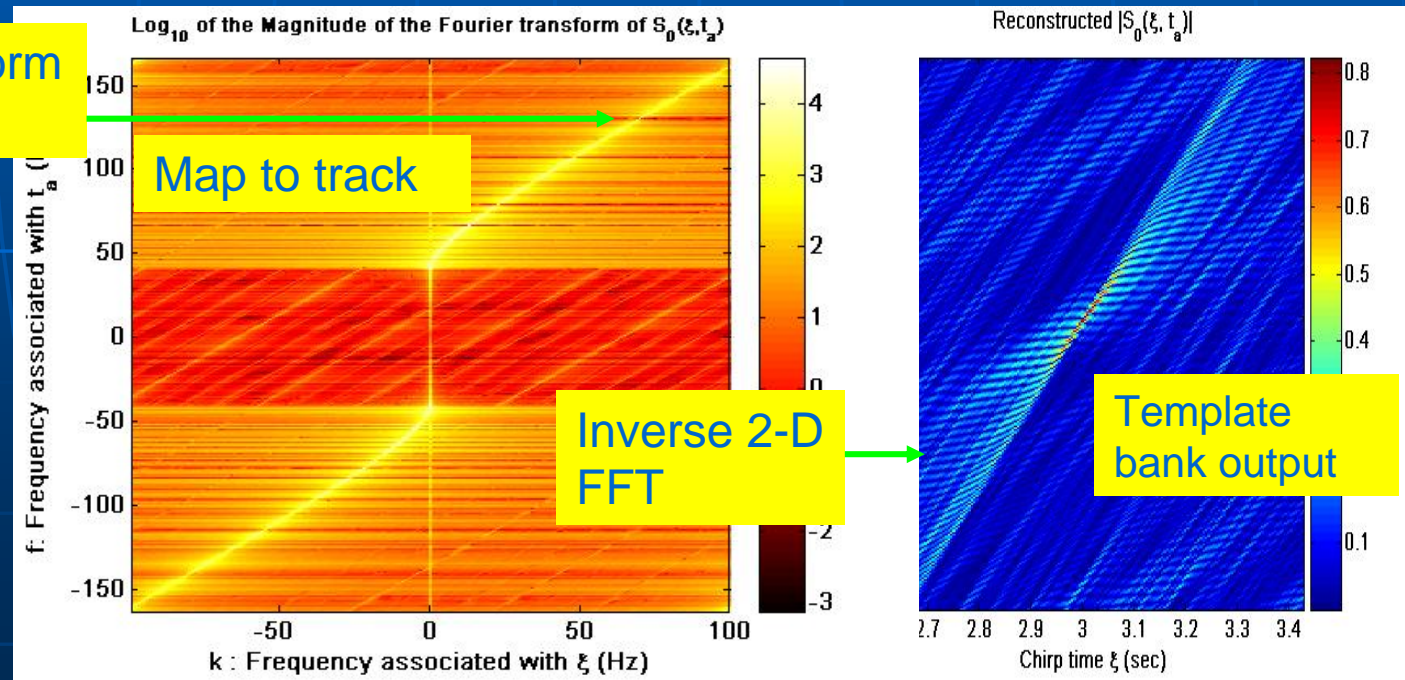
Sampling theory and matched filtering

Soumya D. Mohanty

The University of Texas at Brownsville

We find that the two-dimensional Fourier transform of the output of a Newtonian binary inspiral template bank exists on a one-dimensional track. This leads to a new procedure for constructing the template bank output without the explicit use of templates.

Fourier transform data

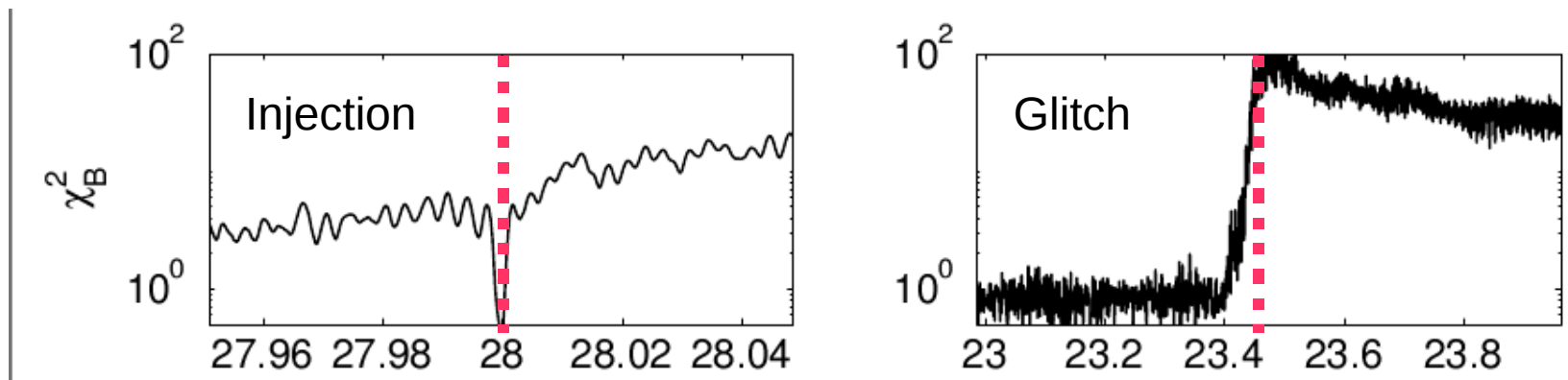


on
Sale

Cheap chi-squared tests for gravitational wave searches

C. Hanna, P. Brady, J. Creighton, G. González, W. Johnson, B. Owen

Gravitational wave searches have a higher background rate than expected for Gaussian noise due to the non-stationary noise of interferometric gravitational wave detectors. This presentation describes two computationally efficient chi-squared tests that are powerful at distinguishing real signals from non-stationary, non-Gaussian noise.





Data Quality and Vetoes in Searches for Compact Binary Coalescences in LIGO's Fifth Science Run



Jacob Slutsky for the LSC

Gravitational wave searches for compact binary coalescences are hindered by transient detector noises, which produce false alarms. The LSC found time intervals of a variety of data artifacts associated with false alarms and used them to create vetoes.

Time-Frequency Representation of LIGO Data

