CAN LISA HEAR THIS?

A LISA OBSERVER TOOL

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User inputs:

- GW source type
- Binary object masses
- Frequency or orbital separation
- Luminosity distance or redshift
- Sky location or favorable/ unfavorable configuration

Tool outputs:

- SNR value
- Signal amplitude + noise sensitivity vs freq.
- SNR vs time plot
- Estimates of parameter precisions (in progress)

DISCUSSIONS AND DEVELOPMENTS

- **Particularities of CLHT:**
  - Directly works in TDI domain (this is what we will measure): plots GW amplitude spectrum and integrated noise level
  - No sky-averaged answers: possibility to give outputs for chosen sky location, or favorable/unfavorable configurations (intervals)
- **Needs for discussion:**
  - Tradeoff between accuracy and complexity. Example: for merging objects, strong dependence on the initial orbital phase of the constellation
  - Format of inputs/outputs
- **To be implemented:**
  - Estimates of parameter uncertainties
  - Interactive plotting
- **Coming soon:**
  - Public URL
  - EMRI sources

EXAMPLE FOR A GALACTIC BINARY

LISA Observer Tool

Type of Source: 3 choices

- (•) Non-merging binary (quasi-monochromatic)
- ( ) Merging binary
- ( ) Extreme-mass ratio inspiral

Source Parameters: 6 values to specify

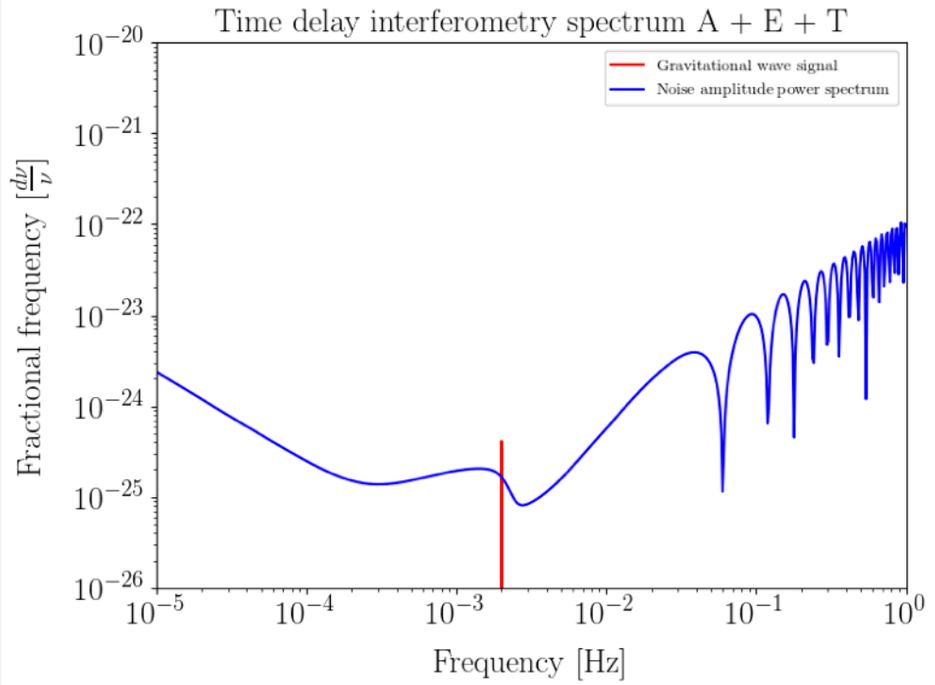
Intrinsic Mass of Object 1 (M⊙)	0.45		
Intrinsic Mass of Object 2 (M⊙)	0.7		
Source Inclination angle (deg)	0		
Wave polarization angle (deg)	0		
Luminosity Distance (mpc)	0.01	**or** Redshift	0.00000223821126210145 13
Orbital Period (sec)	1e3	**or** Separation Distance (km)	156945.8783225503

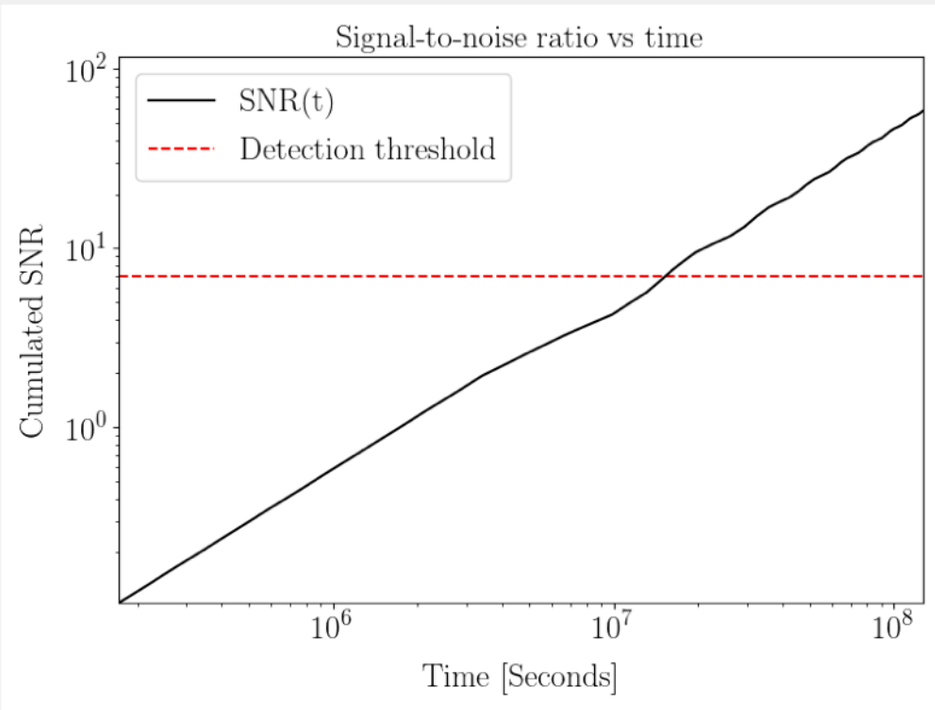
Sky Location and Orientation

( ) User Specified
Latitude Longitude
(•) Favorable
( ) Unfavorable

Submit Reset

SNR: [24.5032728]





EXAMPLE FOR A MASSIVE BLACK HOLE BINARY

LISA Observer Tool

Type of Source: 3 choices

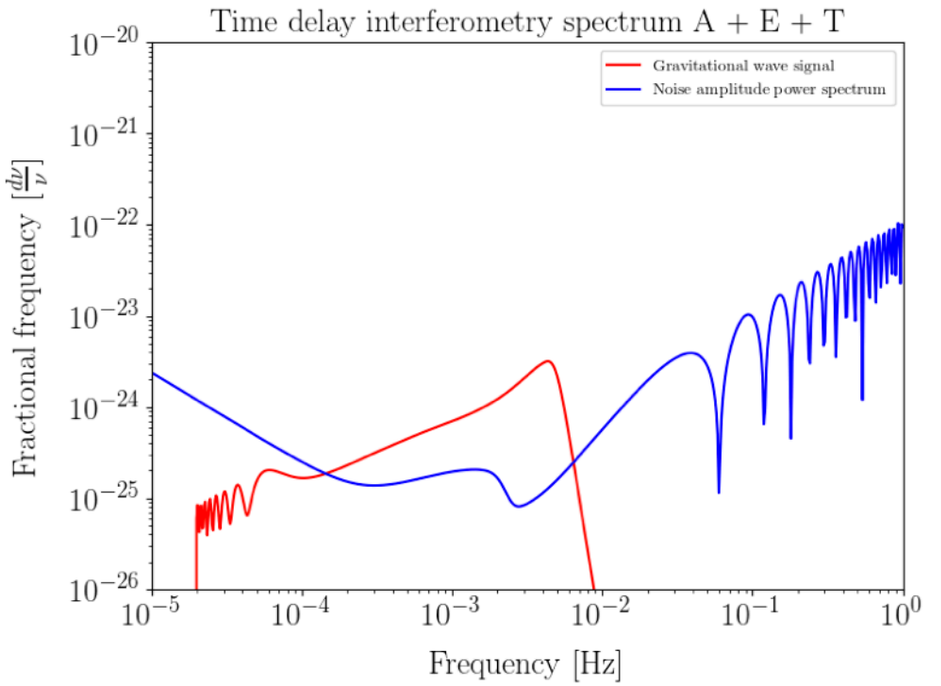
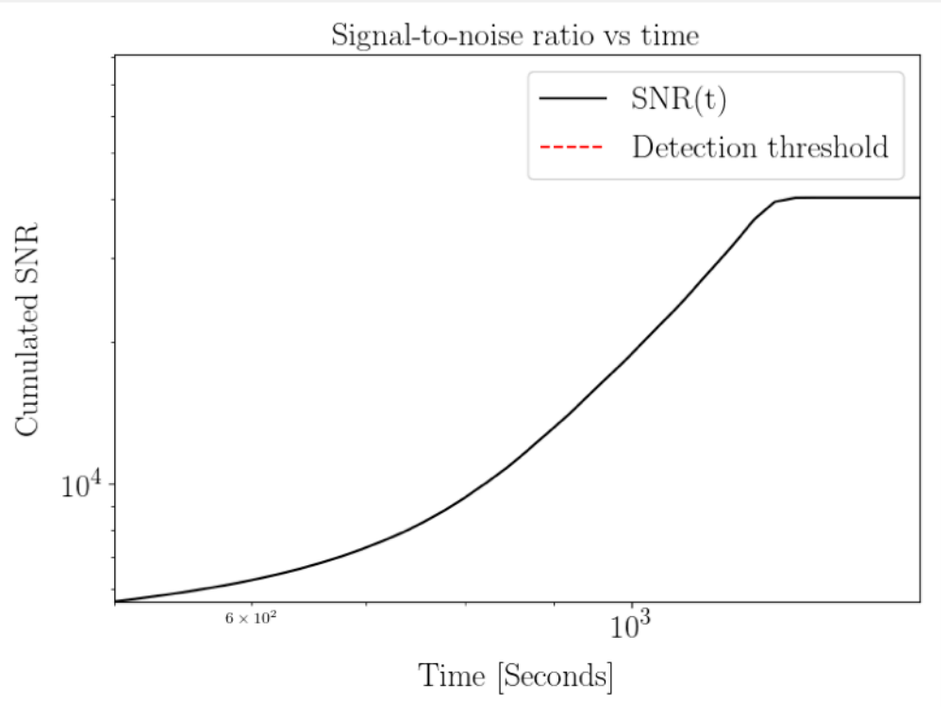
- ○ Non-merging binary (quasi-monochromatic)
- ◉ Merging binary
- ○ Extreme-mass ratio inspiral

Source Parameters: 6 values to specify

Intrinsic Mass of Object 1 (M⊙)	1e6		
Intrinsic Mass of Object 2 (M⊙)	2e6		
Source Inclination angle (deg)	0		
Wave polarization angle (deg)	0		
Luminosity Distance (mpc)	1000	**or** Redshift	0.1965100253559855
Orbital Period (sec)	1e3	**or** Separation Distance (km)	21605430.55873182

Sky Location and Orientation

- ○ User Specified
  - Latitude
  - Longitude
- ◉ Favorable
- ○ Unfavorable

Submit Reset

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