

ET Mock Data Challenge



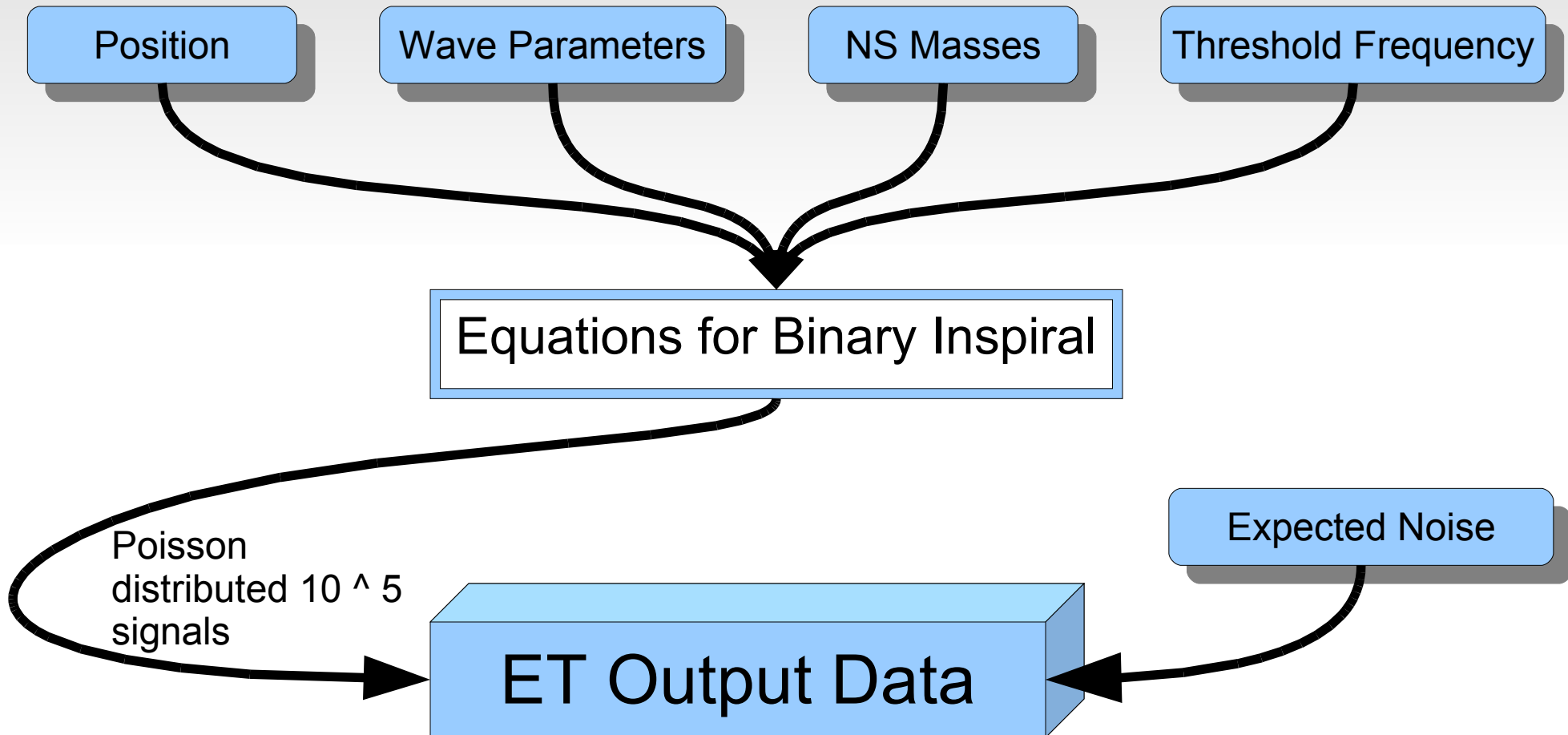
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Introduction

- Based on LISA Mock Data Challenge
- Simulate NS-NS systems for ET
- Determine effective source resolution
- Threshold frequency cost vs. benefit
- Preliminarily 1 month of data, expand to 1 year
- Time vs. frequency domains
- Restricted waveform
- Random inputs from known parameter ranges

Simulation Overview



Input Parameters

Position

θ , φ , and i

Uniform Distribution

Wave Parameters

Ψ and Φ

Uniform Distribution

NS Masses

Gaussian Distribution

1 – 3 M

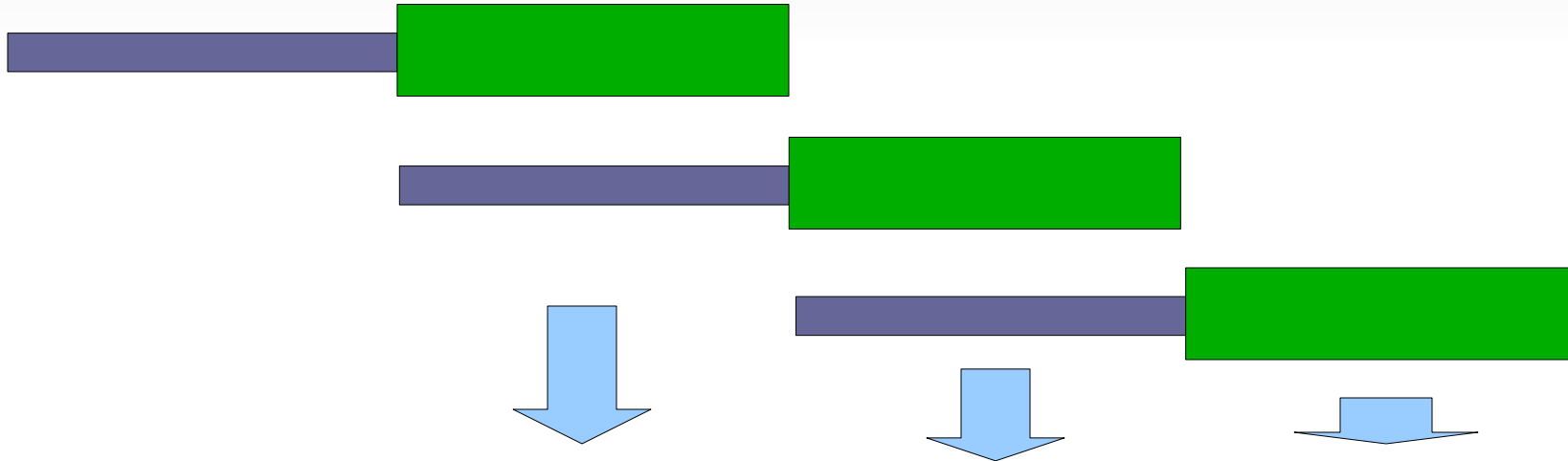
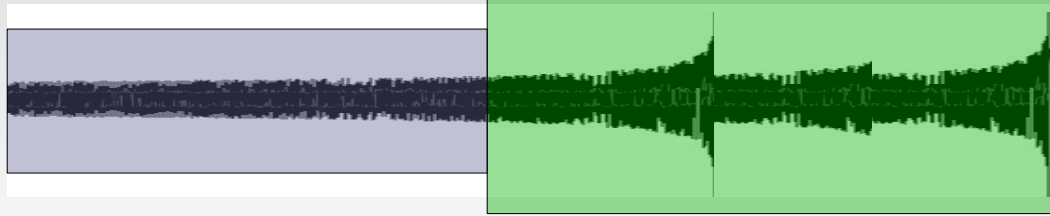
Mean: 1.4

Sigma: 0.5

Computation Requirements

Chirp Bin

Coalescence Bin



Aprox. 50 GB
Output Data



Input Parameters

- Threshold frequencies of 10, 5, 2, and 1 Hertz

Frequency	Chirp Time (1.4M)
10 Hz	~ 16 mins
5 Hz	~ 1.7 hrs
2 Hz	~ 20 hrs
1 Hz	~ 5.5 days

- Signals placed along Poisson distribution
- Luminosity distance more complicated

Cost-Benefit Analysis

- At 1 Hz, average signal overlap of ~17,000
 - Verses ~38 at 10 Hz
- Will data analysis retrieve all waveforms?
- Is it cost effective?

Further Work

- Include higher Post-Newtonian terms
- Increase run time
- Test against extant data extraction techniques