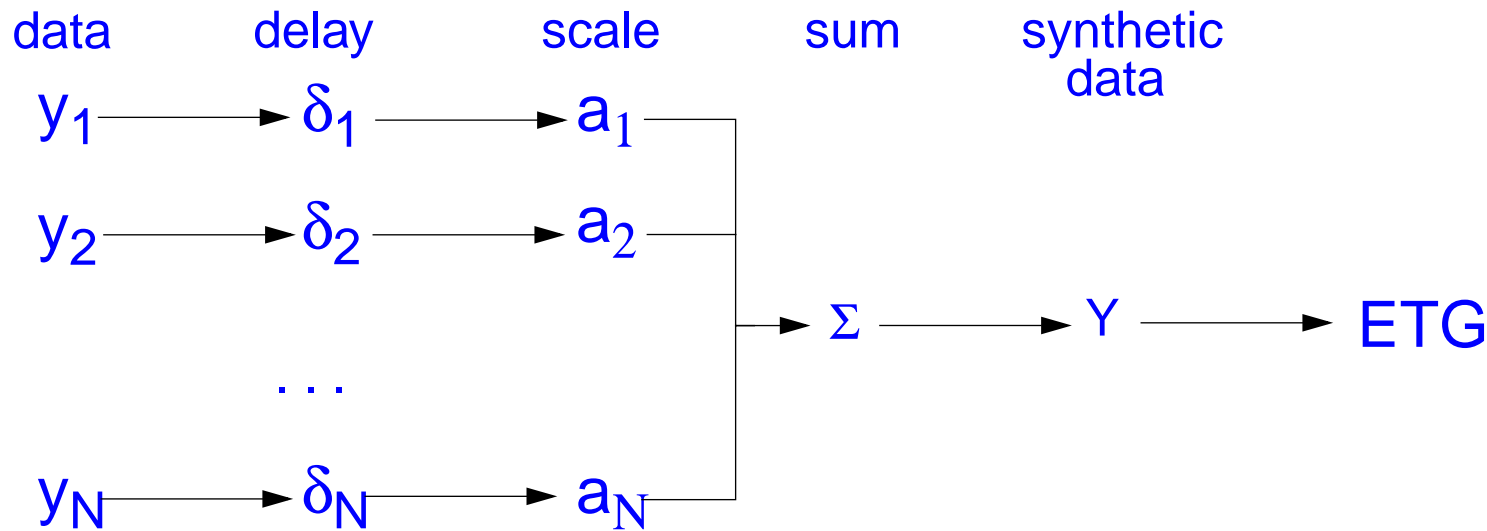


# Unmodeled Bursts

- Build synthetic data to allow reusing burst ETGs on a network:



- Can choose the weights to maximize SNR
- Works perfectly only when + and x cross-correlation has extremum at zero lag
- Search over source position (2 angles) and two signal parameters:
  - ›› ratio of power in cross polarization to power in plus polarization
  - ›› cross-correlation between plus and cross polarizations **at zero lag**

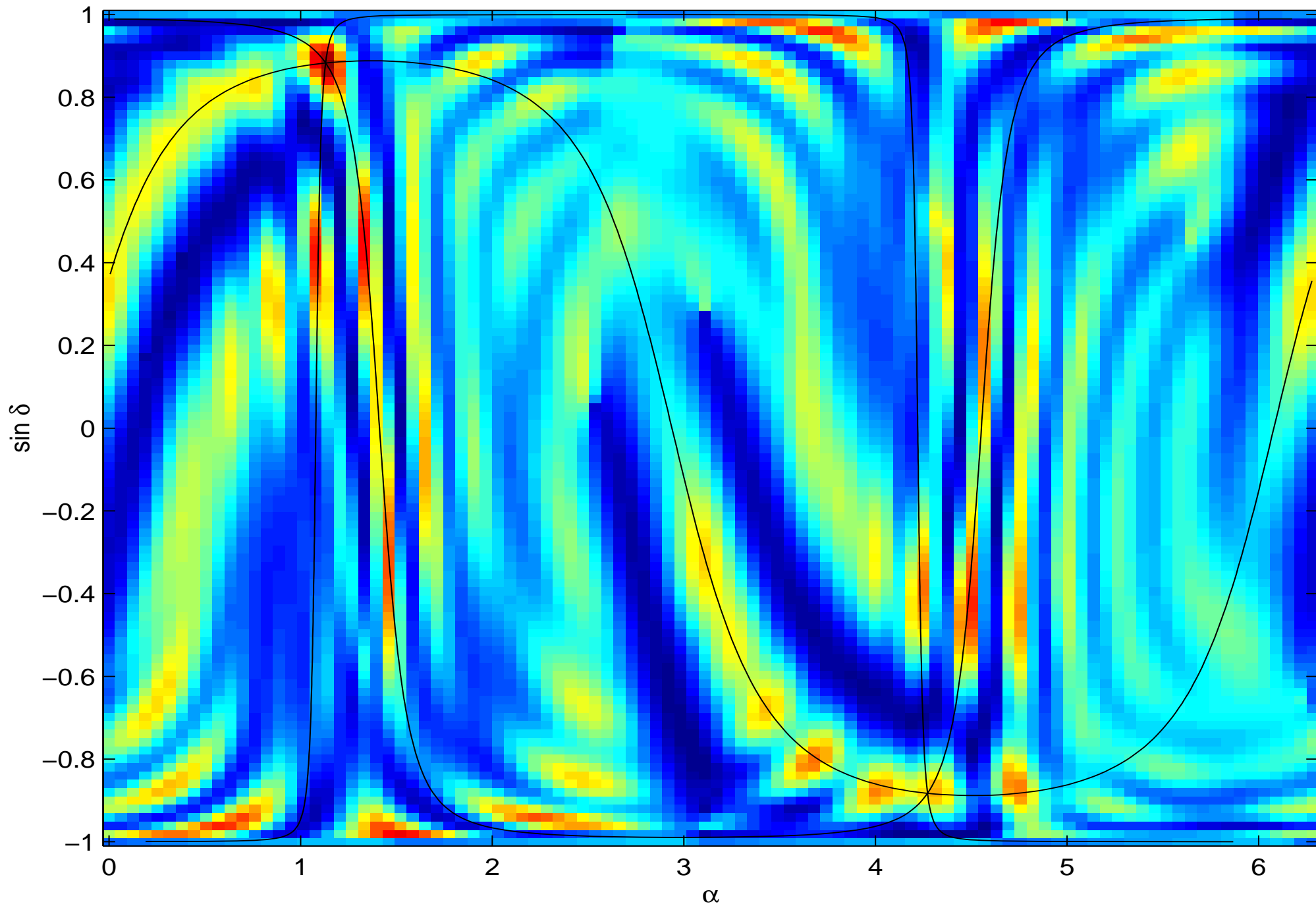
# Numerical Simulations

---

- Algorithm coded in LAL + LDAS
- For decent parameter space search, runs in ~2 node-hours
- Signal is bandpassed white noise
  - ›› central frequency = 150 Hz
  - ›› bandwidth = 100 Hz
- Signal can be coherent in all IFOs (to simulate a GW)
- Signal can be incoherent in all IFOs (to simulate a false coincidence)
- Signal duration is 1/16 s

p2c = 2, pdc = -0.55556

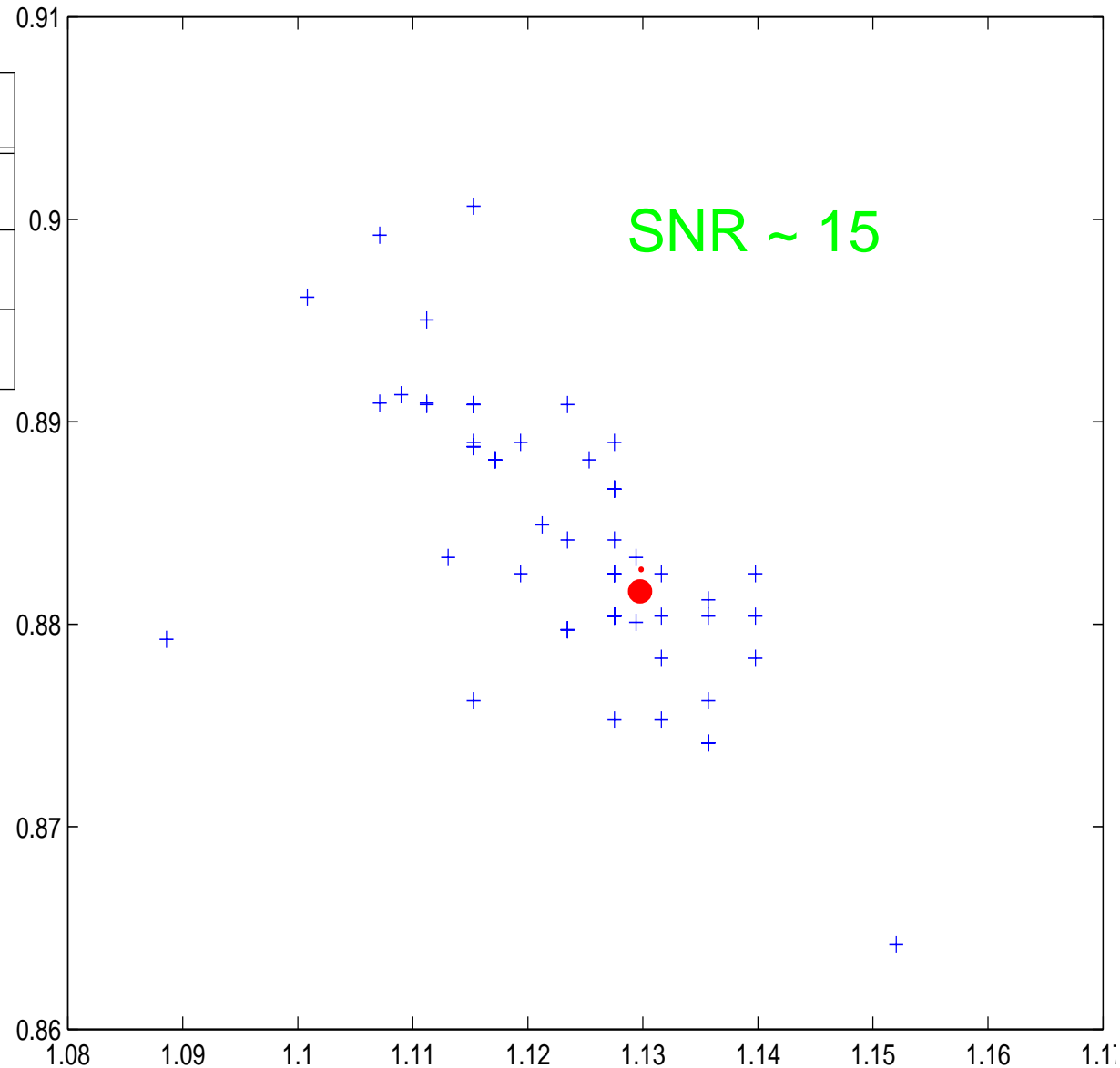
SNR ~ 100



# Position Error

SNR	RMS $\Delta\Omega$ (sr)
12.5	$1.44 \cdot 10^{-4}$ (N=13)
15	$2.36 \cdot 10^{-4}$ (N=54)
20	$1.26 \cdot 10^{-4}$ (N=15)

Compare  $2\sigma$  SNR~15:  $\Delta\Omega \sim 5 \cdot 10^{-4}$  sr  
with triangulation:  $\Delta\Omega \sim 8 \cdot 10^{-4}$  sr  
or coherent analysis:  $\Delta\Omega \sim 2 \cdot 10^{-4}$  sr  
for the Newtonian Chirp



# False vs. Real Coincidences

- In simulations, little difference between distributions of max SNR
- However, the ratio (max SNR)/(mean SNR) is an excellent discriminator

