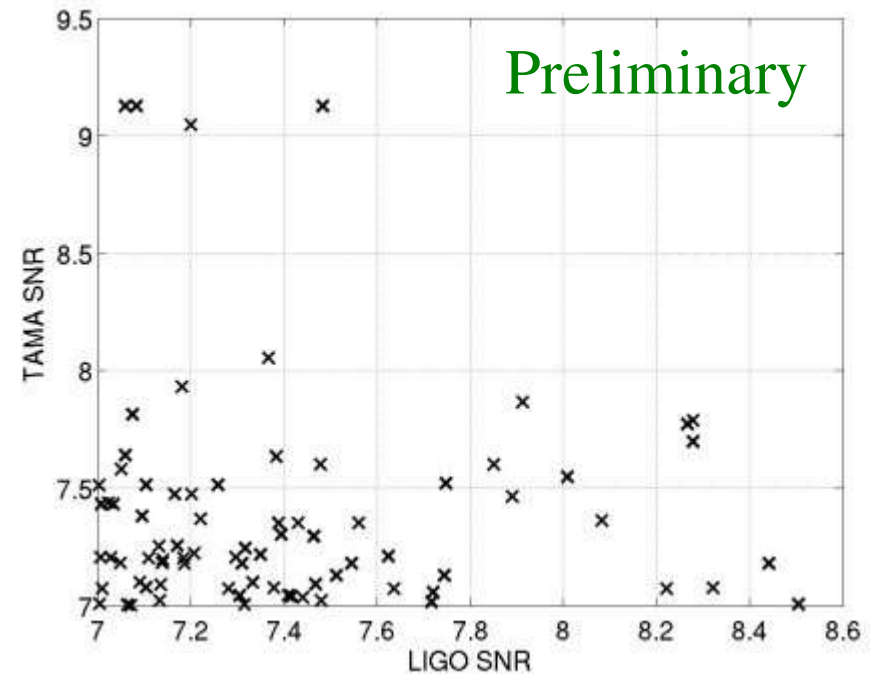


# Search Details

- Instruments analyzed independently, thresholds:
  - $\rho > 7$  and  $\chi^2 < 5.0 \{15 + (0.15 \rho)^2\}$  for LIGO
  - $\rho > 7$  and  $\chi^2 < 2.4 \{16 + (0.185 \rho)^2\}$  for TAMA
- List of triggers exchanged and tested for coincidence
  - Time coincidence window
    - TAMA-LLO 35 ms (light travel time 32.2 ms)
    - TAMA-LHO 27 ms (light travel time 24.9 ms)
  - Chirp mass coincidence window  $0.05 M_{\odot}$
- Before performing search, study
  - background by performing time slides
  - evaluate search efficiency with injected signals

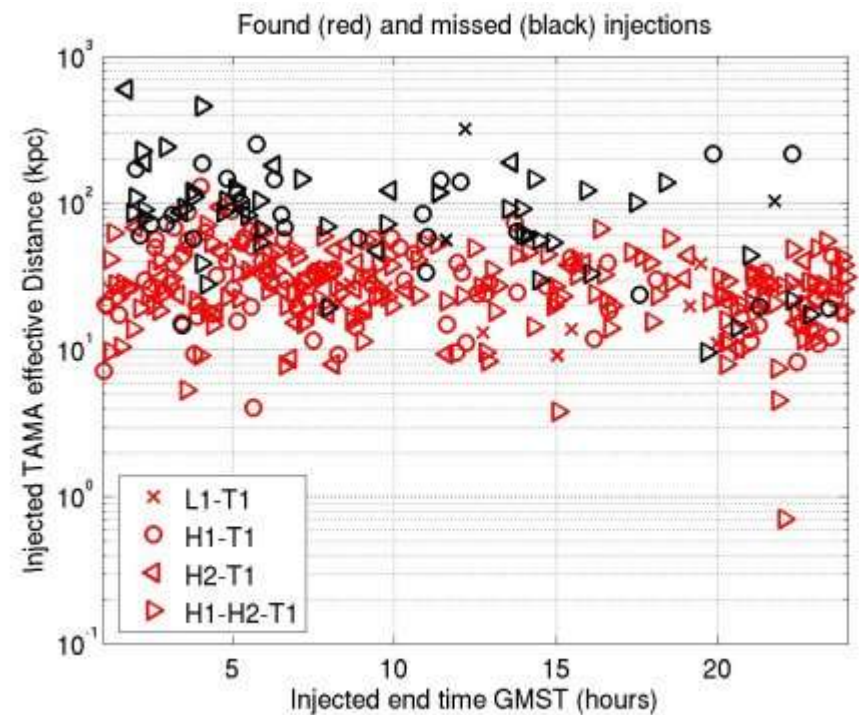
# Time Slide Analysis

- We can estimate the background of (noise generated) coincidences by performing time slides
  - We have analyzed the playground data and
  - Performed 100 time slides of +/- 5, 10, ... 250 seconds of TAMA triggers relative to LIGO triggers

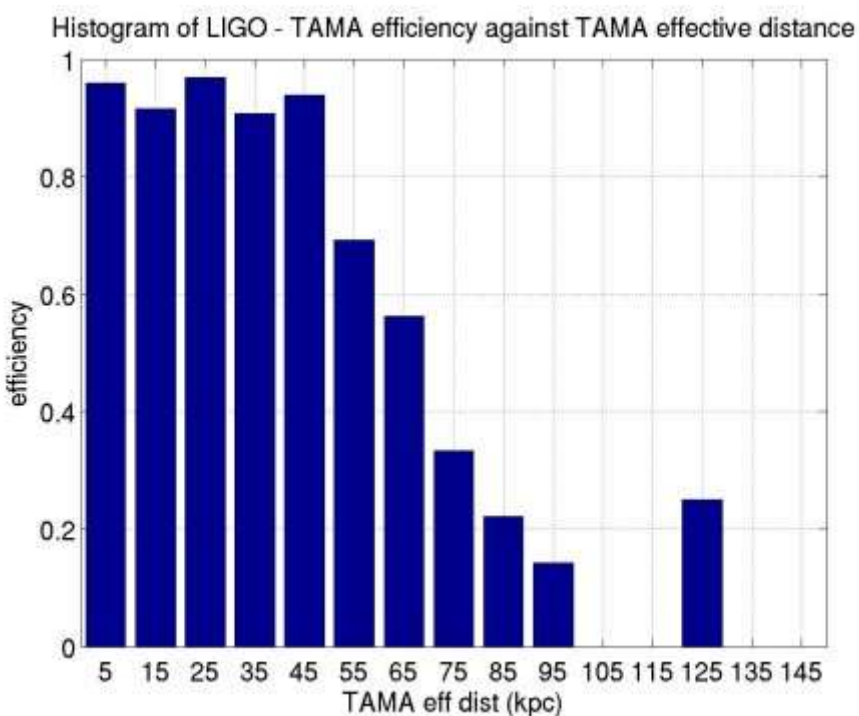


# Injection Analysis

- Inject galactic BNS inspirals into both LIGO and TAMA data
  - component masses of  $1-3 M_{\odot}$
  - exchange triggers within 1 minute of injections

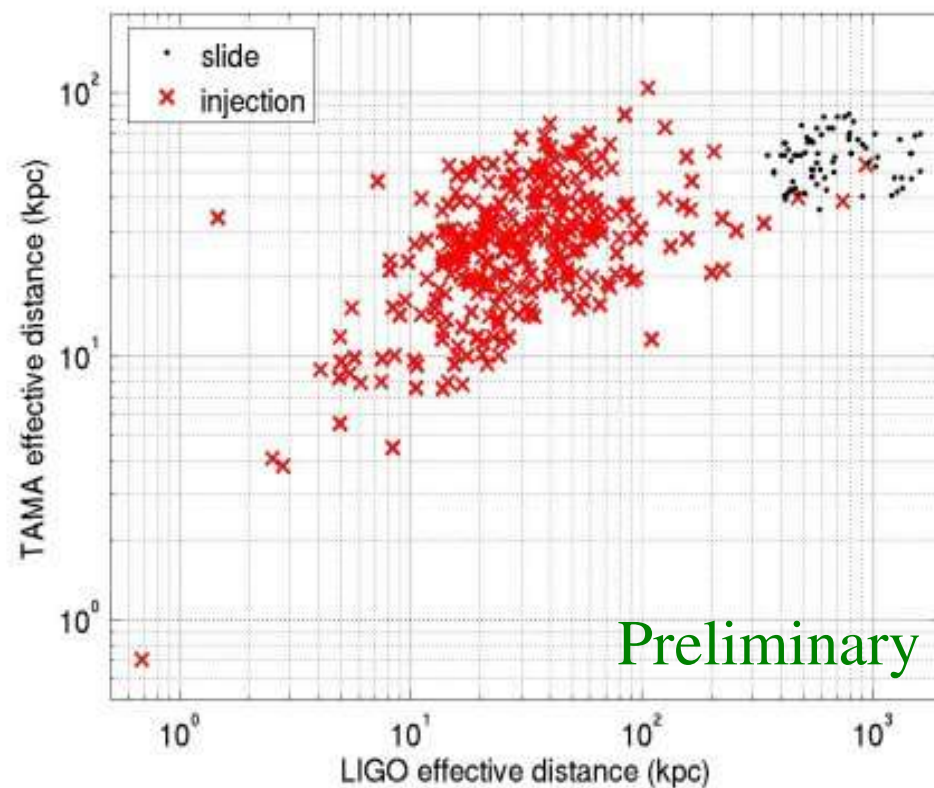


- Majority of “missed” injections are too distant to be seen in TAMA.
- Preliminary** studies indicate search is sensitive to **0.78 MWEG**.



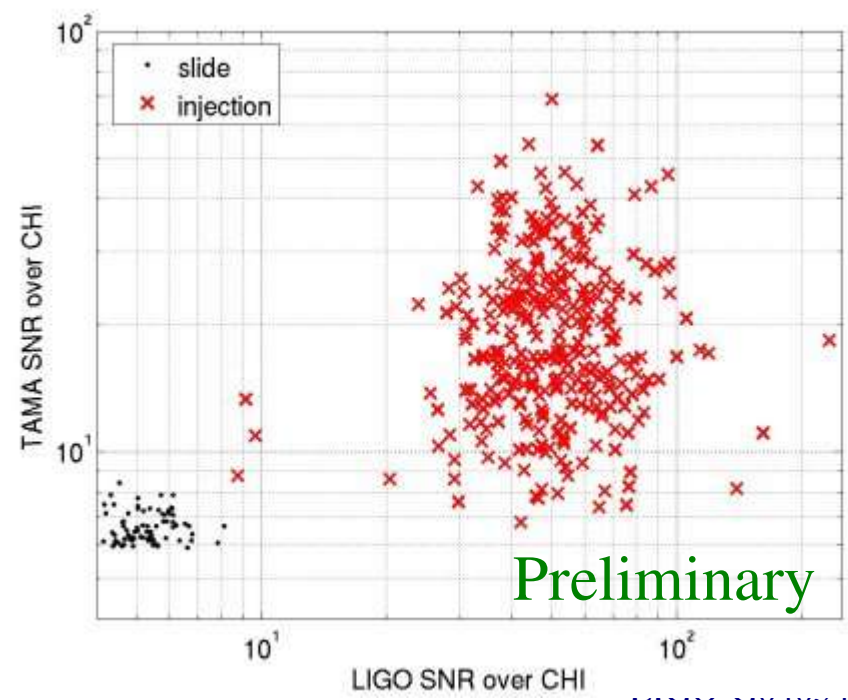
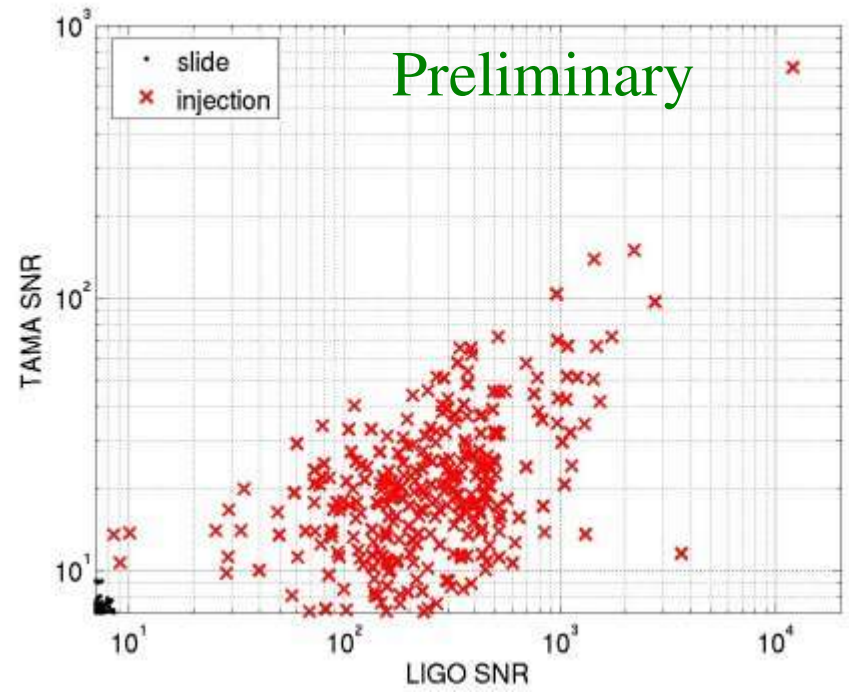
# Effective distances

- LIGO and TAMA have very different antenna patterns.
- Can obtain large ratios of effective distance
  - factor of 10 not uncommon
- Despite this, injections are distinct from the background.



# Combining Triggers

- We need a coherent statistic to combine triggers
  - LIGO used  $\rho^2$  in S2 analysis.
  - TAMA used  $\rho/\sqrt{\chi^2}$  in TAMA-LISM analysis.
  - Both excellent at distinguishing injections from background.



# Summary

- Search for galactic BNS in S2/DT8
  - search 650 hours not used in LIGO S2 search
  - data analyzed independently and triggers exchanged
- Playground analysis
  - time slides to estimate background
  - injections give **preliminary** sensitivity to **0.78 MWEG**
- To do ...
  - finalise coherent statistic
  - search full data set