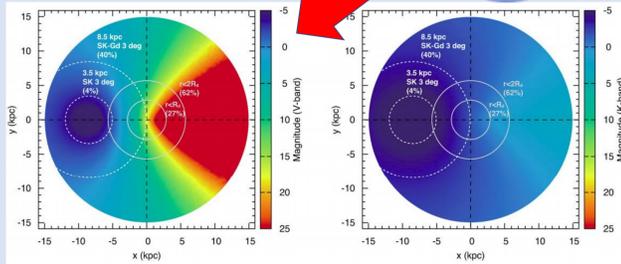


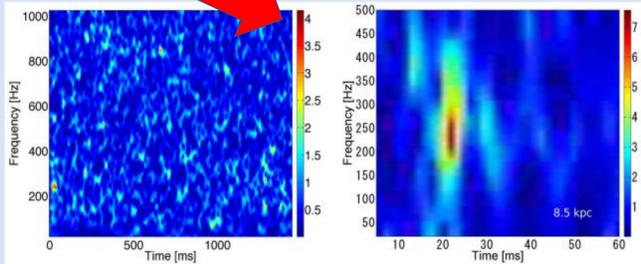
MOTIVATION

- Source pointing and distance by neutrinos are crucial for a successful MM follow-up
- Timing of the neutrino signal is key for those parameter estimates

EM observations

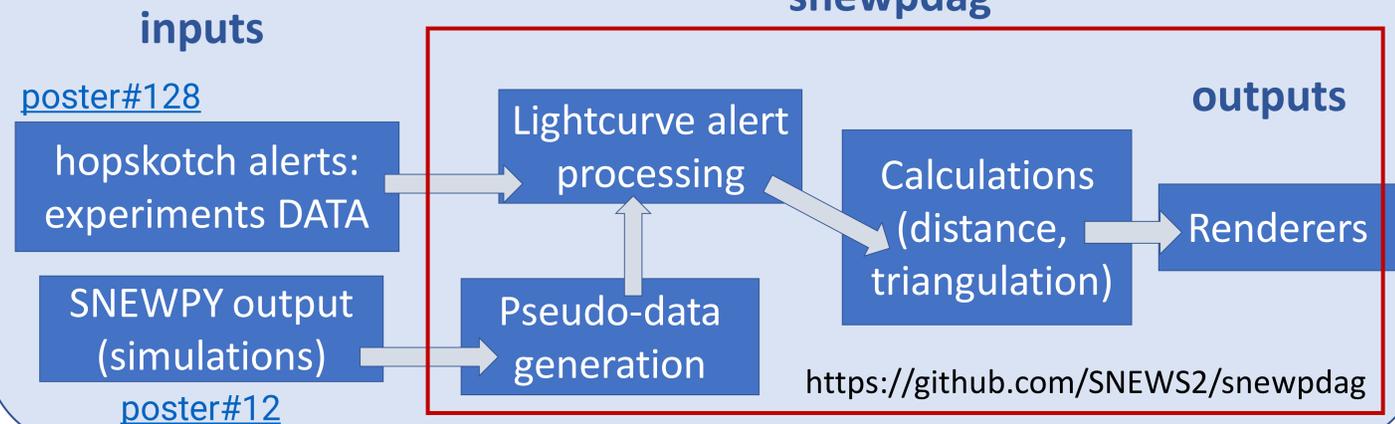


GW observations



Figures from [1]

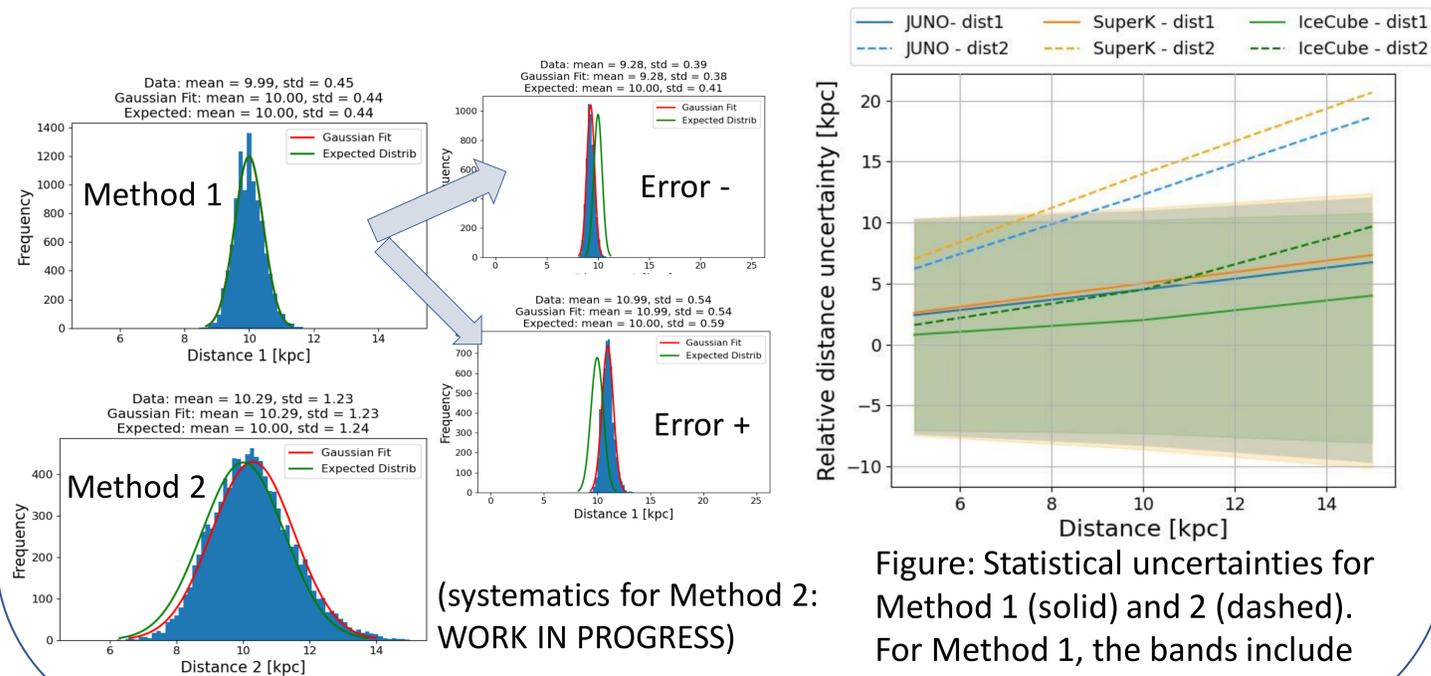
snewpdag: pipeline chain and connections



Source distance estimate

Methods from [2], based on N_{50} = number of events observed in the first 50 ms

1. Using the expected signal weighted over mass function ($IMF_{N_{50}}$)
 - Lower stat uncertainty, larger model systematics
2. Using the linear relation between N_{50} and $f\Delta = N_{50}/N(100-150)$
 - Larger stat uncertainty, lower model systematics



(systematics for Method 2: WORK IN PROGRESS)

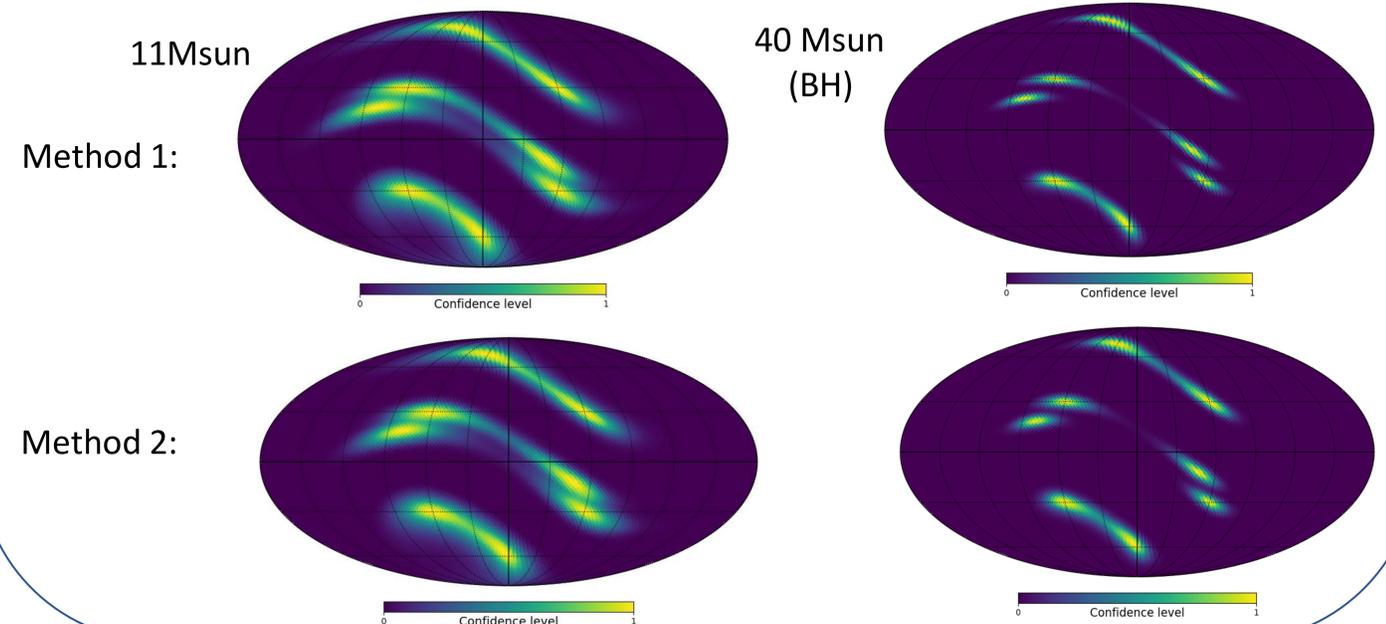
Time delay estimate and triangulation

Different methods to extract the time differences can be run on snnewpdag, such as:

1. Matching the experimental lightcurves [3]
 2. Using the first event times in each detector [4]
- > Uncertainties and bias for those methods used to produce triangulation skymaps

RESULTS combining IceCube + Super-Kamiokande + JUNO detectors @10 kpc:

-> 4 different true directions are compared in each skymap



[1] K. Nakamura et al, MNRAS 461 (2016) 3

[3] A. Coleiro et al., EPJ.C 80 (2020) 856

[2] M. Segerlund et al, arXiv:2021.10624

[4] N. B. Linzer and K. Scholberg, PRD 100 (2019)

CONCLUSION

- SNEWS2.0 pipeline for alert processing and triangulation is in place
- We are getting ready to test all the chain in the first firedrills