ABSTRACT
High-mass BBH events like GW190521 may appear similar to BH encounters in current detectors. Here we show that, with appropriate injections, the encounter can be inferred to credible posterior using BBH templates. Therefore, this possibility should be considered for future GW events that lack the inspiral portion. Also we give a prospect of a fast machine learning method to point out the indication.

RESULTS
We performed PE run on the encounters with BBH-like posteriors by Bilby, during which non-spinning and spinning BBH templates are adopted. Then we injected BBH using medians of samples to see how BBH mimic BH encounter. Bayes Factor $\frac{H_{\text{spinning}}}{H_{\text{non-spinning}}}$ shows that spinning BBH template models the data better. We expect that VItamin can quickly give an indication of BH encounter GW event being misclassified as BBH, through the distribution of J-$S$ divergence, while this still needs a large-scale PE run in the future work.

FUTURE WORKS
- Application of IMRPhenomXHM model
- Large scale PE run for full-sky search
- Addition of spins parameter space for VItamin