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# The LSC Detection Committee

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# Outline



- Why a Detection Committee?
- Charge
- First action: assembling a recommended procedure for handling a detection claim



# Why a detection committee?



When our data suggests we have made a detection:

The stakes will be high.

The demands on our judgment will be different.

We have to get it right.

Stan Whitcomb ran a useful exercise at last August's LSC meeting. Each UL group responded to a challenge problem.

Lots of good sense was in evidence, but

There was no consensus on such things as statistical standards.

We're still immature on procedures for checking the reality of a signal and for vetting the result, both internally and externally.



# Detection Committee Charge



A standing committee to advise the LSC and the Spokesperson on issues relating to making a claim that we have detected gravitational waves.

And also, perhaps, of other statistical issues.

Appointed in consultation with Analysis Coordinator and the Search Groups.

Stuart Anderson, Jolien Creighton, Sam Finn, Albert Lazzarini, Greg Mendell, Peter Shawhan, Rai Weiss, John Whelan, Stan Whitcomb, Alan Wiseman, PRS (chair)



# Drafting an LSC



## detection procedure

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Detection Committee now at work on a draft procedure for us to follow when we have an apparent detection.

Procedure will contain:

- suggestions for scientific checks (some relevant for all searches, some search-specific)
- special considerations in the review procedure applicable to a detection claim



# Scientific checks



- correctness of software
- statistical confidence
- understanding of the instruments
- ability to rule out non-GW explanations
- cleanliness of data and signatures
- use of follow-up LSC gravitational wave observations
- connection with astrophysical theory
- checks with other gravitational wave detectors, and other astronomical observations



# Procedural issues



- Should there be special procedures for software review?
- Should there be special procedures for review of the analysis as a whole?
- When should the LSC seek results of coincident outside observations?
- How should a preliminary indication be discussed within the LSC?
- Should there be special procedures for LSC approval and Lab concurrence?
- What should be the process of consulting with GWIC or other members of the community?
- How should a detection claim be announced and published?