



Colloquium

Role of calibration in coming era of gravitational wave science

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Abstract : The number of detected gravitational wave events by LIGO and Virgo in Observation run 4 has been increased by 50% compared to the total of Observation runs 1, 2 and 3. With upcoming sensitivity improvements in Observation run 5, the gravitational wave detection is going to transit from individual to statistical process. More and more template independent search pipelines are being developed for anomaly detection contrary to traditional matched filtering techniques. Also, gravitational wave sources like burst waves and stochastic gravitational wave background are statistical in nature. In this situation, systematic errors in calibration become the essential ingredient for the detection of unknown Physics. The calibration pipelines are needed to be modernized for the new tasks for future runs. In this talk, I will briefly discuss the current calibration method, challenges and improvement efforts for future runs and detectors.