Poster Session #F
Gravitational Wave detectors and other sources

F11

BRiSTOL - a Band-limited RMS Stationarity Test Tool for Gravitational Wave Data

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Common techniques in Gravitational Wave data analysis assume, to some extent, the stationarity and Gaussianity of the detector noise. These assumptions are not always satisfied because of the presence of short duration transients, namely glitches, and other slower variations in the statistical properties of the noise, which might be related to malfunctioning subsystems. We present here a new technique to test the stationarity hypothesis with minimal assumptions on the data, exploiting the band-limited root mean square and the two-samples Kolmogorov-Smirnov test. The outcome is a time-frequency map showing where the hypothesis is to be rejected. This technique was used as part of the event validation procedure for assessing the quality of the LIGO and Virgo data during O3. We also report on the applications of the test to both simulated and real data, highlighting its sensitivity to various kinds of non-stationarities.