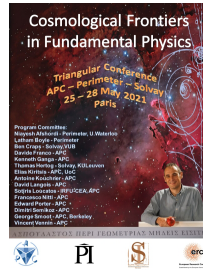


Cosmological Frontiers in Fundamental Physics Triangular Conference : APC - Perimeter - Solvay 2021



ID de Contribution: 6

Type: Non spécifié

Detecting Gravitational Waves Using the public LIGO-VIRGO data: Doubling the sample of Binary Black Hole Mergers

mardi 25 mai 2021 18:10 (40 minutes)

The LIGO-VIRGO data presents a magnificent opportunity for exploring the uncharted territory of binary compact objects.

We have developed an independent analysis pipeline for analyzing the public LIGO-VIRGO data from the first two observing runs. We have developed several novel techniques, and revisited all the choices essential for such an analysis. The resulting improvement (comparing to the LIGO-VIRGO official analysis) amounts to doubling the probed volume for binary black holes, and as a result, doubled the sample of detected events.

Among the newly discovered events are:

An event (GW170121) with substantial negative effective spin,

An event (GW151216) with maximal effective spin, inconsistent with dynamical formation.

An event (GW170817A) with source frame total mass of about a hundred solar masses, constraining the existence of any potential upper mass cutoffs.

I will also discuss the prospects for detecting systems of lensed GW events, what we learn from them, and present an intriguing candidate.

Last, I will briefly mention current and future projects including some future directions in GW astrophysics.

Orateur: Prof. ZACKAY, Barak (Weizmann Institute of Science)

Classification de Session: Second Session, Tuesday