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Gravitational Waves and the detection at the dawn of time

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Almost a decade ago, the first observation of gravitational waves and the discovery of the merger of a binary black-hole system opened up a new window into the Universe. With many more binary-black-hole mergers observed, with in addition the observation and discovery of a binary neutron star merger, the establishment of gravitational wave astronomy revolutionised astroparticle physics. Current gravitational wave observatories are planning system upgrades to maximise their performance to the limits of their facilities.
To further revolutionize gravitational wave astronomy and astrophysics, such as post-merger physics, precision test of GR, and potentially structure formation studies or observe dark matter signatures, new gravitational wave observatories are required. These next generation facilities will extend their reach detecting binary merger events every 5 minutes. With signal to noise ratios of up to 1000 for nearby signals and with detections possible to redshifts of 20, they can observe stellar remnants throughout cosmic time and look deep into the Universe with unprecedented precision.
In this presentation I will walk through the current status of the activities toward the next generation gravitational wave detectors.

Collaboration you are representing

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