



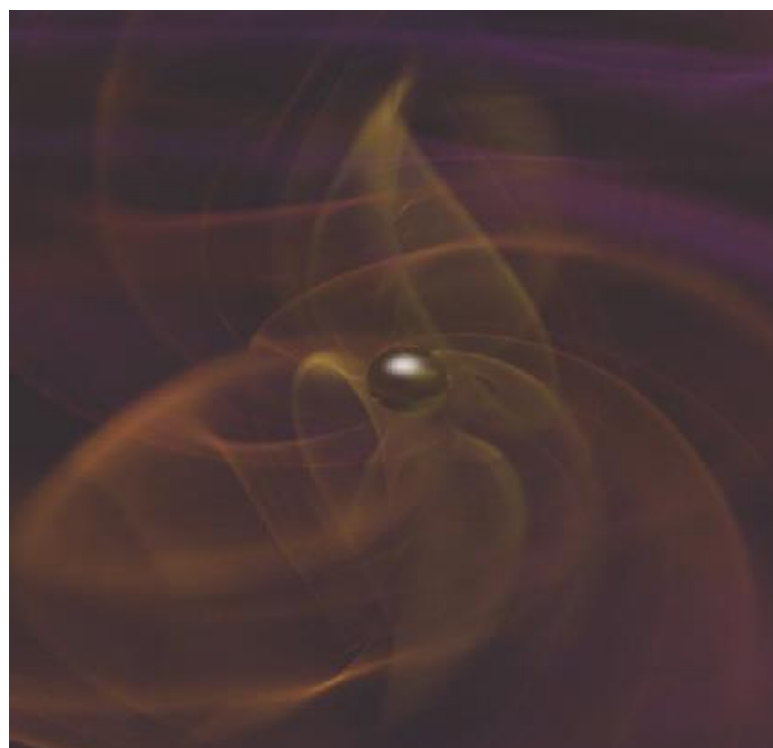
VIDEO Colloquium: Probing strong gravity with gravitational waves.

Tuesday, 18 May, 2021

Webcast 16:45 h

Chris Van Den Broeck (Utrecht University & Nikhef)

The direct detection of gravitational waves from coalescing binary neutron stars and black holes has given us access to strong gravity in an unprecedented way, opening up new opportunities to test alternative theories of gravity and the nature of compact objects. Though the gravitational wave signals are weak, their detailed shape carries a wealth of information about the nature of the source that emitted them, as well as about the nature of gravitational waves themselves. Observing the way two black holes spiral towards each other and merge, has enabled us to probe the genuinely strong-field dynamics of vacuum spacetime for the first time. Moreover, the propagation of gravitational waves over large distances can be investigated in detail, with a view on constraining the graviton mass as well as other effects that would induce dispersion of gravitational waves in vacuum. With a network of gravitational wave detectors, also the polarization content of gravitational waves can be determined. Finally, over the next few years, after planned upgrades of Advanced LIGO and Virgo, we will start probing the nature of compact objects themselves, with a view on testing the no hair conjecture and the area increase theorem, and searching for (quantum) modifications of Kerr black holes.



[Zoom connection details:](#)

Meeting ID: 996 1652 8733
Meeting Password: 733220