

GW generation at the 4th post-Newtonian approximation

The first observation of gravitational waves (GW) due to coalescing binary black holes in 2015, and neutrons stars two years later consecrated the birth of gravitational astronomy.

But in order to reach an era of precision gravitational astronomy, we need a more accurate knowledge of the waveform, flux and energy carried by those GW. It is indeed required to help the detectors (LIGO/Virgo on ground and LISA in space) enhance their sensibilities, but also to improve the determination of the binary parameters (masses, spins,...) and have more accurate ways of testing our theory of gravitation.

A way of deriving such quantities is by a double series expansion : a "multipolar-post-Minkowkian" and a "post-Newtonian", *ie.* by expressing the multipolar structure of the radiation field order by order in inverse powers of the speed of light.

In this talk, I will discuss the state of the art of the computation of energy and flux of GW by such a method.