Gravitational Waves or the Elephant in Room

QGD precludes the existence of gravitational waves so how can this be reconciled with the advanced LIGO observatory detections of signals that are consistent with gravitational waves predicted from general relativity? How does QGD explain these signals if, as it predicts, there are no gravitational waves?

LIGO made detected several signals that were thought to be due to gravitational waves but only the detection of the event known as GW170817 had electromagnetic counterparts. This observation makes it possible to narrow down the possible explanations to one.

If QGD's theory of gravity is correct then the observations of electromagnetic counterparts rather than confirming the existence of gravitational waves falsifies it. Or at the very least excludes the possibility that GW170817 is a gravitational signal. The question we must then answer is: What explains the signal?

It is important to keep in mind that any explanation we provide must be consistent with QGD's axiom set. The axiomatic approach adopted for QGD prohibits the introduction of ad hoc explanations in the theory.

First, since LIGO-VIRGO detected the GW170817 only 1.7 seconds before the detection of a gamma ray burst, if the signal was generated by the same event we can assume that it must have travelled at the speed of light. Now, according to QGD, only $preons^{(+)}$, photons and neutrinos can travel at the speed of light. Since GW170817 is neither of the latter two we are left with only one possibility; GW170817 is caused by $preons^{(+)}$, specifically $preons^{(+)}$ resulting from the polarization of a large regions of the preonic field. The mechanism of polarization has been discussed in detail here.

Secondly, the event produces a wave-like signal which increases in both frequency and amplitude. This is consistent with the polarization of the preonic field by a coalescing binary system.

As the stars of a binary system accelerate towards each other, they themselves become polarized. The polarization of the stars results from the polarization of the components $preons^{(+)}$ of the stars by the increasing gravitational interaction in accordance to the laws we derived in the section titled Gravitational Interactions and Momentum.

The intensity of the polarization of the preonic field is by each one of the stars proportional to the size and density of the stars and its rotation speed.

For a binary system, the polarization of a neighboring region of the preonic field will vary as polarized stars pass through them. So the closer there orbit each other, the higher the orbital speed, the greater the frequency. And the greater their speed, the greater their polarization.

The frequency of the signal is the proportional rotation speed of the binary system $f = \frac{v_\theta}{\pi}$

As for the amplitude of the signal $\left\| \vec{P}_\Theta \right\|$ we have

$\left\| \vec{P}_\Theta \right\| \propto \frac{\left\| \vec{P}_{b_1} \right\| dens_{b_1} \cos\delta + \left\| \vec{P}_{b_2} \right\| dens_{b_2} \cos(\delta + \pi)}{d} dens_{p^{(+)}} v_\theta \cos\theta$ where v_s is the rotation speed of the system, δ is the angle of the star relative to the line of sight, θ is the inclination of the plane of rotation, d the distance of the observer, $dens_{b_1}$ and $dens_{b_2}$ the densities of the stars b_1 and b_2 and $dens_{p^{(+)}}$ the density of the preonic field in the neighboring region of the binary system.

From the above, we can see that the signals detected by LIGO and VIRGO are consistent with both the prediction of general relativity and QGD, that is it could cause by gravitational waves or by preonic waves. Thus a prediction unique to QGD is necessary to determine which of the interpretations of the observations is correct.

Preonic waves are composed of polarized $preons^{(+)}$ just as magnetic fields are. It follows that if the signal is due to preonic waves, QGD predicts that it would cause fluctuations in the magnetic moment of a magnet and the signal formed by the fluctuations will mirror the signal detected by LIGO-VIRGO observatories or other gravitational wave detector. Testing the prediction can be accomplished comparing signals detected by LIGO-VIRGO or future detectors to fluctuations in magnetic fields generated by reference magnets using high precision magnetic field sensor.