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Using 'Filterpolation' with LISA/OMEGA Satellites to detect Gravitational Waves

In order to verify Einstein's Theory of Relativity, direct evidence of Gravitational Waves (GW) need to be detected. The current solution is using grounded laser interferometers (such as LIGO) to detect shifts in the space-time fabric. Earth's conditions do not allow for the sensitivity needed to observe these small changes from noise. The next solution is to put larger interferometers in space (LISA and OMEGA) to eliminate noise. Once in space, the satellites will be able to detect GWs. However, there is currently no way to tell which direction the GW came from, just that it was detected. The way to solve this is to run the data through a low pass filter, relative to the barycenter of our solar system. In order to improve on collection speed, the data will be 'filterpolated' as it is collected, which is done by taking 2^n evenly spaced data samples that are then sent through the low pass filter.