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True cause of the tides required Galileo, Newton and Kepler

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abstract -

According to "Galileo's Big Mistake" By Peter Tyson - Posted 10.29.02
(<http://www.pbs.org/wgbh/nova/earth/galileo-big-mistake.html>) -

"It was in 1595 when Galileo, just shy of his 30th birthday, first came up with his explanation for the tides. The idea occurred to him while traveling on a barge that was ferrying freshwater to Venice. (Galileo lived in nearby Padua and often visited Venice.) He noticed that whenever the barge's speed or direction altered, the freshwater inside sloshed around accordingly. If the vessel suddenly ground to a halt on a sandbar, for instance, the water pushed up towards the bow then bounced back toward the stern, doing this several times with ever decreasing agitation until it returned to a level state.

Galileo realized that the Earth's dual motion—its daily one around its axis and its annual one around the sun—might have the same effect on oceans and other great bodies of water as the barge had on its freshwater cargo. The key, as Galileo saw it, was that even though we don't sense it, different parts of our planet move at different speeds depending on the time of day. It's as if the Earth were a barge, which sped up, slowed down, and periodically changed direction. The chief objection to Galileo's argument was that his model should have called for only one high tide a day, whereas there are roughly two. Galileo explained this away by stating that many other factors play a role in creating a specific tidal situation. These include the length of a basin, its orientation, its depth, the shape of its coasts, the effect of winds, and so forth."

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content -

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Gravity's apparent attraction can be summarized by the following - gravitation is absorbed into wave packets and the inertia of the gravitons carries objects towards Earth's centre at 9.8 m/s or 32 ft/s. The mass of the oceans on Earth is estimated at nearly 1.5 billion cubic kilometres ["Ocean Volume and Depth" – Van Nostrand's Scientific Encyclopedia, 10th edition 2008]. All this water is being pushed towards Earth's centre at 32 feet per second every second. But the seafloor prevents its descent. So there is a recoil, noticeable offshore

(it is only where oceans and continents meet that tides are great enough to be noticed). This recoil is larger during the spring tides seen at full and new moon because sun, Earth and moon are aligned at these times.

The rotating Sun bulges at its equator and therefore has a larger equatorial than polar diameter, and more mass at its equator. This means more gravitation has been diverted to that region. Planets are also made from gravity and electromagnetism interacting,* and must consequently lie in the path gravity waves took from the outer solar system to the solar equator (more gravitation was diverted here - so if planets are created by gravity and electromagnetism, it follows that they'd be created where the gravitational "current" is greatest). For simplicity, we say the Sun's gravitation is strongest at its equator and planets are compelled to orbit in the ecliptic plane. The previous paragraph's alignment of Sun, Earth and moon therefore refers to their being lined up "where the gravitational current is greatest" and more of the gravitational waves travelling from the outer solar system being captured by solar and lunar wave packets, and less of them being available on Earth to suppress oceanic recoil (there are still enough to maintain the falling-bodies rate of 32 ft/s²). At the neap tides of 1st and 3rd quarter; the sun, earth and moon aren't lined up but form a right angle and our planet has access to more gravity waves, which suppress oceanic recoil to a greater degree. We can imagine the sun and moon pulling earth's water in different directions at neap tide. If variables like wind/atmospheric pressure/storms are deleted, this causes neap tides which are much lower than spring tides.

* When Einstein penned $E=mc^2$, he used c (c^2) to convert between energy units and mass units. The conversion number is 90,000,000,000 (light's velocity of 300,000 km/s x 300,000 km/s) which approx. equals 10^{11} . Gravity (gravitation) can produce electromagnetic force, though there are other methods. Gravity waves with a strength of 10^1 are, via gravitational lensing, concentrated 10^{24} times after they're focused to form matter (to 10^{25} , weak nuclear force's strength[^] - giving the illusion that a weak nuclear force that is not the product of gravitation exists). (If binary digits form space-time and gravitation, and all particles are composed of those digits, the sequence of 1's and 0's composing gravitons can become the sequence making up the W^+ , W^- and Z^0 particles of the weak force; the gluons of the nuclear strong force; or of electromagnetism's photons.) Waves are magnified by the matter's density to achieve electromagnetism's strength (10^{36} times gravity's strength) i.e. 10^{25} is multiplied by Einstein's conversion factor [10^{11}] and gives 10^{36} (this gives the illusion of the existence of electric and magnetic fields that are not a product of gravitation – last century, Einstein stated that gravitation and electromagnetism are related). After absorption by atoms, the depleted remnant of the gravity waves is re-radiated from stars, interstellar gas and dust, etc. as electromagnetic waves - possibly a microwave background - and as gravitational waves which have lost most of their energy or strength during formation of forces (returning to a strength of " 10^1 ".)

^ Remember, this is only one example: the so-called weak force's "strength isn't constant" and varies with distances ["The Strengths of the Known Forces" by theoretical physicist Matt Strassler [May 31, 2013] - <http://profmattstrassler.com/articles-and-posts/particle-physics-basics/the-known-forces-of-nature/the-strength-of-the-known-forces/>].

The gravitons of gravitational waves and photons of electromagnetic waves could be ultimately composed of the binary digits of 1 and 0 encoding π , e , $\sqrt{2}$ etc (because the cosmos seems to be fundamentally mathematical). Matter particles (and even bosons like the Higgs, W and Z particles) could receive their mass by gravitons/photons interacting in "wave packets" (explaining wave-particle duality). $E=mc^2$ supports this idea of deleting distance.

Representing the masslessness of photons by 0 (zero) and replacing the m (mass in Einstein's famous equation relating energy, mass and the speed of light) with the masslessness results in $E=0 \cdot c^2$ i.e. $E=0$. Having reduced the equation to E , $m=0$ and $c^2=0$ which means $m=c^2$. At first glance, $m=c^2$ seems to be saying mass exists at light speed. But the absence of E refers to there being no interaction of light energy and gravitational energy, and therefore no mass. If mass cannot be produced, $\text{space}=0$, $\text{time}=0$ and $\text{gravity}=0$. The zero-ness of space-time/gravity does not mean they don't exist. It means we can appear to re-locate matter and information superluminally, or travel into the past and future, because distance is eliminated in both space and time.