

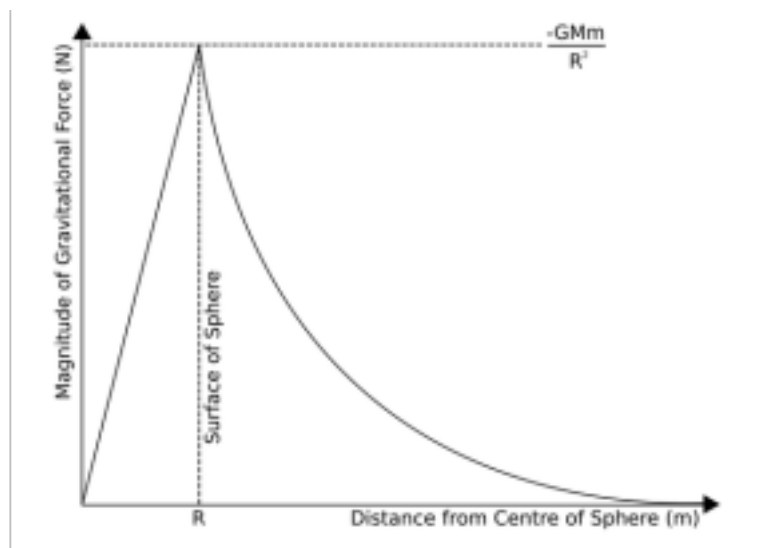
Why is the gravitational force of a gas negligible?



Michael Brenner

Studied Mechanical Engineering & Comparative Linguistics at Vienna University of Technology · Author has 408 answers and 991.2K answer views · 1y

The gravitational force of a gas is not negligible, it is NOT DEFINED: Newton's gravity is a surface feature, that means an object needs to have a defined surface in order to have a defined radius which is necessary to define the gravitational force as well as a position in relation to it: $F/m=GM/R^2$



Without a definitive [R] there cannot be talk about gravity the way Newton formulated it, and a gas does not have a shape, a surface, a radius, a form. It's **container** has, therefore a container filled with gas has the weight of the container plus the weight of the gas it contains. But put a scale inside the container and there is no weight reading, although the gas still has the same mass. Newton already knew that and expressed in his Principia that there are two kinds of matter: **condensed** and **gaseous** matter and that they behave differently: condensed matter **attracts** and gaseous matter **repels**.

The conundrum Newtonian minds cannot dissolve is that they say "how come gas has mass but no gravity"? a little study of the gas laws and gas physics would help greatly to solve the riddle, but that is what Newtonian minds just can't get their head around - I guess because the Newtonian claim to "universality" would suffer a devastating blow.

We often read here on Quora and hear in discussions elsewhere that the **Kinetic Energy** of gas particles is still $K=0.5mv^2$ and thus dependent on mass but what is never offered is the small print of this contract and that says that the velocity of a gas particle is proportional to the inverse square-root of its mass $v \propto 1/\sqrt{m}$ - how about that? and what does that mean? it means that no matter how heavy the particles are, the temperature of a gaseous system represented by the kinetic energy of its constituent particles is unaffected by their mass simply because the product of $[mv^2]$ does not change with changing mass, temperature is only affected by the **number** of particles the **volume** and the **pressure**, mass and thus gravity have no role in it.

$$T=Pv/kN$$

This has of course far reaching consequences which are way to scary for most people to even contemplate: a Gas does not engage with other matter the way condensed matter does, and it certainly cannot self-compress. That is in principle an un-physical notion, just like Munchhausen pulling himself out of a bog by his own hair. Why this is so widely accepted is beyond "innocent" explanation, it is the result of "science" turned into the "confidence game" for intellectuals.

Here is how **James Jean** handles that struggle, the struggle of knowing perfectly well how it works and still search for an excuse that allows him to not accept what he knows.

Here we can read that Jeans knows perfectly well that the **Kant Nebula Hypothesis** - still the foundation of modern cosmology - is garbage, yet he just keeps his mind going until he finds words - as unrelated to physical reality as they might be - that sound as if he had

*"The principle difficulty lies in finding a system which shall satisfy the ordinary gas equations, and shall at the same time give an adequate representation of the primitive nebula of astronomy. If we begin by supposing a nebula to consist of a gas which satisfies at every point the ordinarily assumed gas equations, and to be free from the influence of all external forces, then **the only configuration of equilibrium is one which extends to an infinite distance**, and is such that the nebula contains an **infinite amount of gas**. The difficulty could be avoided by supposing that the nebula is of finite size, and that equilibrium is maintained by a **constant pressure applied to the outer surface of the nebula**. If this pressure is so great that the density of the gas at the outer surface is sufficiently large to justify us in supposing that the gas equations are satisfied everywhere inside this surface, then the difficulty in question will have been removed. Suppose, next, that the matter outside *S* consists mainly of molecules or of masses of matter which are describing hyperbolic or parabolic orbits, or which **come from infinity** and after rebounding from the nebula, **return to infinity**."*

This is so hilariously un-physical one wonders how it finds room in the same brain that knows about the fundamental laws which prohibit such a proposition. First, molecules cannot hit the surface of a gas, because there is none, and second, particles coming from eternity and returning to eternity just to create a pressure, a virtual container so to speak, is not even something theologians would come up with, it is pure lunacy in and of itself apart from physics.

This is not new though, the father of modern Geology **Charles Lyell** dismissed the observations of field geologists and palaeontologists who found Hippopotami in England with an argument that competes in grades of lunacy with Jeans.

*"(geologists) may freely speculate on the time when herds of **hippopotami** issued from North African rivers, such as the Nile, and **swam northward in summer** along the coasts of the Mediterranean, or even occasionally visited islands near the shore. Here and there they may have landed to graze or browse, tarrying awhile, and afterwards continuing their course northward. Others may have swum in a few summer days from rivers in the south of Spain or France to the Somme, Thames, or Severn, making timely retreat to the south before the snow and ice set in."*

The disturbing part of this proposition is not its sheer lunacy though, but the reaction of Qurans who came back with: *"well, I'm not a biologist, who am I to judge what Hippos can or cannot do?"*.... well, ask your ten year old what he/she thinks of Hippopotami swimming from Africa to England and back in one season and you'll get an idea who you are.

As unrelated as these two stories seem to be - other than sharing a degree of lunacy - there is a profoundly consequential historic and "scientific" connection to modern cosmology and this comes in the persona of **Sir A. Eddington**: his speculations that the sun is a self-compressed, gravity driven, gaseous nuclear furnace came as a direct answer to **Charles Lyell's** "Principles of Geology" where the professional lawyer turned hobby Geologist proposes, no, dictates the completely unfounded dogma called **"Uniformitarianism"**. Here for the first time geological epochs were counted in millions and billions of years - not because of observation, but of theological and philosophical considerations - and a physicist like Eddington had to come up with an answer to how the sun could be powered for such a long time. The only available "fuel" in his mind was nuclear fusion and for that he needed gas and pressure - so, against all observation of field helio-physicists who knew already in the 19th century that the the sun must be of condensed matter - G.Kirchhoff among them - he invented out of the blue without any kind of observation or experiment an entirely made up heliophysics only to fit the musings of a hobby geologist - that is how bad it is, sorry to break it to you.

But back to the question at hand: gas and gravity - the atmosphere has no weight, it has pressure, and that pressure changes constantly all over the place. And the fact that it has pressure tells us that it must reside inside a container, because the kinetic energy of gas particles is not a question of position (gravity) but a question of temperate (thermodynamics). The pressure gradient is coupled to a density gradient which makes the unequal distribution of the atmosphere ISOCHORIC - and that means, would you turn off gravity, the atmosphere would equalise throughout the volume, but NOT disappear, that is, do work onto the environment, because work has not been done to it in the first place - that is the meaning of isochoric "compression".

Gravity cannot compress **and** heat a gas - end of physics story! hippopotami stories may continue to flourish though and they do, like helio-physicists speculating about a *"virtual surface"* now in order to keep things together.....



Shane Michaels · 1y

Now if you could show an example of a container with gas, that also has pressure gradients that would help validate all this typing! 😊



Michael Brenner · 1y

Glad you mentioned that: would gas react to gravity as law of position and conversion of potential energy to kinetic energy, the top of the container would be cooler than the bottom - which it never is. Gravity cannot cha (more)

Shane Michaels Pressure and friction take care of thermodynamics...so what then, no...

View 6 other answers to this question >

About the Author



Michael Brenner

📍 Studied Mechanical Engineering & Comparative Linguistics at Vienna University of Technology

👁️ 991.2K content views 16.6K this month

🏠 Active in 1 Space

📅 Joined August 2016