Retrieval augmented generation (RAG)

This page is an experimental application of RAG, retrieval-augmented generation.

Over the years, I wrote more than **11,000 answers** on the question-and-answer Web site **Quora**, mostly on the subject of fundamental physics, more specifically gravity, quantum field theory, cosmological physics, and also some more basic topics.

Through this page, you can utilize machine intelligence to extract information. Based on your query, the machine intelligence retrieves my most relevant answers and feeds them to a language model (Google's Gemma) which then synthesizes an answer to your query.

Keep the query short and on-topic, preferably a single phrase like "Schrödinger's cat". Otherwise, the answers will likely be nonsensical. The answers, of course, may not be accurate and may not accurately reflect my views. The relatively small, quantized language model used has somewhat limited capabilities and it may misunderstand complex explanations.

Please use this service sparingly. It runs on my local hardware resources.

Do axisymmetric configurations of mass produce gravitational radiation? Ask

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Axisymmetric configurations of mass do not produce gravitational waves. This is a fundamental aspect of how gravitational waves are generated.

To elaborate, a rotating body that is axisymmetric (meaning it is symmetric around an axis) will not emit gravitational radiation. Similarly, a monopole gravitational wave would be produced by a pulsating, spherically symmetric system. The key point is that to generate gravitational waves, the system needs to lack axial symmetry.

Think of it this way: gravitational waves are essentially ripples in spacetime caused by accelerated masses. However, if a system is perfectly symmetrical, the accelerations effectively cancel each other out, preventing the generation of these ripples. Even though a rotating planet like Earth emits a small amount of gravitational radiation (due to its orbital motion), it’s incredibly small compared to the kinetic energies involved and is essentially undetectable.

Another important point is that just like electrically charged objects require acceleration to emit electromagnetic waves, gravitational waves require a change in the gravitational field. A perfectly symmetrical, static gravitational field will not produce gravitational waves.

References

- **Does every object with a mass emit gravitational waves?**
- **If two black holes merge without orbiting, what is the mass loss due to gravitational waves?**
- **Does a planet's rotation emit gravitational waves, hence reducing its energy? If so, does that mean it will eventually stop?**
- **Do all masses emit gravitational waves?**
- **Do gravitational waves propagate out from the plane of rotation of the rotating bodies or do they expand out omni directionally in an expanding sphere?**