

Fliers of Urth, or "Tiger in the tank"

The Urth list — 1 messages, 1 voices, 02 Aug 1999

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Michael Andre-Driussi — 02 Aug 1999, 16:39

Mitchell A. Bailey wrote:

Now let me get this straight: the cherry-leaf fliers the Autarch and a few privileged characters of the Commonwealth (including Vodalus) possess supposedly get their lift from the supposed repulsion of antimatter to a gravitational field of pro-matter (i.e. that of Urth) ?
I.e. antimatter generates antigravity?

This looks like a definite case of "hard-physics-this-ain't". General relativity definitely says that antimatter would behave indistinguishably from promatter, gravitywise. Supposedly there are some exotic field theories out there that predict _maybe_ differently, but they aren't any of them widely accepted.

Well of course it could very well be the blunder you make it out to be.

Then again, people have been tripped up by various "science" issues in the Urth Cycle, for example: "solar" sails (they seem more "cosmic" than "photonic"); "dying" sun (a huge pile of complaints here--timescales; inner planets reduced to cinders . . .); etc.

FWIW, and I know that ain't much, my sense of it was that the mysterious substance was not "antimatter" so much as it was "anti-lodestone"; that is, it is =not= what we skiffy types call "antigravity" but what we call "magnetic monopole."

That is to say: the lift is provided by magnetic repulsion as the monopole reacts to Urth's magnetic field. Now, a normal magnet forced into this "repulsive" mode will tend to (seek to?) flip over onto its other pole and accelerate in its "attractive" mode (assisted by gravity) toward the planetary body. However, a magnetic monopole, by definition, lacks the "other pole." That is, it can't flip over.

Hmmm.

You don't like that one?

Okay, well then brace yourself, because Science speculation has outstripped you and everything you know is wrong! <g>

Robert L. Forward, in INDISTINGUISHABLE FROM MAGIC:

"All the matter that we know of is the type called regular (positive) matter. Yet both the Newton and the Einstein Theories of Gravity allow the existence of an opposite form of matter, called negative matter. According to the theories of gravity and mechanics, an atom of negative matter would repel all other matter (including other atoms of negative matter).

"Now, the first thing you should realize is that negative matter is

not `antimatter.' Antimatter is different from regular matter in its quantum mechanical properties, not its gravitational properties. Although it has yet to be proven experimentally, we are fairly sure that antimatter attracts other forms of matter, just like normal matter. Negative matter, however, would repel other forms of matter."

"We do not know how to make negative matter. But when we do, we will discover that it will not cost us any energy to make that negative matter. Because the rest mass energy of a particle is proportional to its mass ($E=mc^2$), the rest mass energy of a negative mass particle is negative!" (p. 173-174 in my paperback edition).

With this model, the lift is provided by the negative matter trying to leave the proximity of the planet--a kind of antigravity effect.

=mantis=