

Re: Solar Shell

Source: <http://sci.tech--archive.net/Archive/sci.space.policy/2007-01/msg01066.html>

- *From:* Willie.Mookie@xxxxxxxx
 - *Date:* 27 Jan 2007 18:28:28 -0800
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These are for cylinders and torus like structures in tension.

<http://astsun.astro.virginia.edu/~jh8h/torus3d/section3.html>

Not spherical shell structures in compressions.
These are stable in a gravitational compression on any scale

Which explains why the universe is filled with spherical structures.

Of course, these are not static structures. They are dynamic structures. Orbital rings. Which I have already given reference to.

Iron pellets circulate through magnetic tracks to create orbital rings.

http://en.wikipedia.org/wiki/Space_fountain#Orbital_Ring

Which hold a sheet in tension against gravity

around a spherically symmetric gravity field

Breaking the central gravity source into 5 to 8 smaller bodies doesn't change anything for the orbital ring. solar power combined with the ability to accelerate the circulating particles faster or slower, in response to tidal effects, keeps the rings and associated surface stable.

At least as stable as the tidal motions on Earth due to the sun

On Jan 27, 12:24 am, vinc...@xxxxxxxxxxxxxxxx (pete) wrote:

on 26 Jan 2007 08:52:06 -0800, Willie.Moo...@xxxxxxxx sez:

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On Jan 21, 6:34 pm, jsav...@xxxxxxxxx wrote:

Williamknowsbest wrote:

The surface gravity of the sun is 27.9 gees.

An object held at a radius of 3.68 million km above the solar center would feel a 1.0 gee force directed toward the sun. That is interesting.

If it were possible to reduce the output of the sun to about 0.24% of its current output at peak, and make it a variable star with a 24 hour period, But I think that is too ambitious.

Let us consider something more modest, which does not involve re-engineering the Sun.

How about a sphere around the Sun with many openings, and which on the bottom is coated with a reflective surface more than 99.76% effective? Mirrors reflect a tiny fraction of the sunlight to reflect back on the people living on the framework, held by the Sun's 1g gravity, and these can easily be given a 24 hour cycle.

This is still an incredibly vast undertaking, for the far distant future, but at least it doesn't involve re-engineering the Sun.

John Savard

I was thinking about your idea here this morning. The orbital ring superstructure would form a mesh and could be made highly reflecting. So, if it obstructed say 0.1% of the surface area of the sphere, then

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the openings between the lines of circulating materials could easily transmit the remaining energy.

Making panels reflective would reduce the area available to the black body radiator within – any opening whether it were looking at the surface of the sun or not, would appear to be a black body surface. Since energy per unit area is proportional to the fourth power of temperature, the ratio of temps can be calculated.

$$T_{shell}/T_{sol} = (1/\text{fraction open})^{(1/4)}$$

This new temperature would communicate itself to the sun, and it would increase its radius to compensate for the change in temperature. So, the sun would not remain unaffected by a reflective shell of non-radiating surface. (radiating surfaces are different)

So, if the open area were;

Open Tshel/Tsol	Tshell	radius–new
0.001	– 5.6	35,450K 21.9 million km
0.01	– 3.2	18,250K 3.2 million km
0.1	– 1.8	10,260K 2.1 million km
0.2	– 1.5	8,230K 1.6 million km
0.3	– 1.35	7,800K 1.3 million km
0.4	– 1.26	7,260K 1.1 million km
0.5	– 1.19	6,860K 1.0 million km
0.6	– 1.14	6,560K 0.90 million km
0.7	– 1.09	6,310K 0.83 million km
0.8	– 1.06	6,100K 0.78 million km
0.9	– 1.03	5,930K 0.74 million km
0.99	– 1.0025	5,784K 0.698 million km
1.0	– 1.00	5,770K 0.695 million km

So, the shell could consist of reflective material that had openings in it. For safety, a large hologram spanning the line that intersect the ecliptic would be equipped with a solar powered hologram that projects light precisely at the same energy and color of today's sun throughout the solar system.

We'll modify the sun in either case by building a substantial shell. A shell only 1% populated with the reflective interior surface, would hardly cause any change whatever – but still contain over 3,300 earth areas!

So, this may be a place to start!

But since a shell of any size would change the sun anyway, and that would have to be addressed as the shell was populated, then, there would be pressure to break the sun up into parts that reduced its output, since that increases its longevity. Did I miss the part where it was explained how we overcome the inherent

instability of solid structures around spheres at gravitational scales? And splitting up a sun into a cluster must just make the instability problems vastly worse.

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vincent@triumf[munge].ca Pete Vincent

Disclaimer: all I know I learned from reading Usenet.– Hide quoted text — Show quoted text

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