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New Proposed Path for Manned Trips to Mars: Let Mars' Gravity Capture Spacecraft 95 More Prefs

New Proposed Path for Manned Trips to Mars: Let Mars' Gravity Capture Spacecraft

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95 More Prefs

I think its gonna be a long long time (Score:3, Funny)

by rossdee (243626) Alter Relationship

Mars aint the kind of place to raise your kids

-
- **Re: (Score:5, Interesting)**

  by rudy_wayne (414635) Alter Relationship

  It's an interesting idea, but getting *TO* Mars isn't the real problem. The biggest problem, that nobody is talking about (because they have no idea how to solve it), is *LANDING* on Mars.

  http://www.universetoday.com/7...

  The real problem is the combination of Mars' atmosphere and the size of spacecraft needed for human missions. While the Apollo lunar lander weighed approximately 10 metric tons, a human mission to Mars will require three to six times that mass, given the restraints of staying on the planet for a year. Landing a payload that heavy on Mars is currently impossible, using our existing capabilities. "It's this ugly, grey zone. There's too much atmosphere on Mars to land heavy vehicles like we do on the moon, using propulsive technology, and there's too little atmosphere to land like we do on Earth. Until we come up with a whole new system, landing humans on Mars will be an ugly and scary proposition."

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  - **Re: (Score:2)**

    by angel'o'sphere (80593) Alter Relationship

    Why should the Mars atmosphere be a problem for rocket engines like used when landing on the moon?

    -
    - **Re: (Score:2)**

by itzly (3699663) Alter Relationship
Because the supersonic airflow into the nozzle makes it hard to control.

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- **Re: (Score:4)**

  by K. S. Kyosuke (729550) FriendFriend of a Friend
  Uhhh, I think you could decelerate to subsonic velocities at the proper moment and then continue falling. If it works for the Falcon 9 first stage, under much worse conditions then in the Martian landing scenario (spacecraft mass and gravity), it should work on Mars, too. But I guess it would cost you even more fuel than purely propulsive landing on a Mars-sized body without atmosphere, which is bad enough already.
  --
  Ezekiel 23:20

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  - **Re: (Score:4, Interesting)**

    by FatLittleMonkey (1341387) Alter Relationship

    I think you could decelerate to subsonic velocities at the proper moment

    The "proper moment" is before you enter the atmosphere. So no. As soon as you enter the atmosphere, you can't do a retro-burn until you are subsonic, and you can't slow to subsonic without multiple hypersonic and supersonic parachutes. (Terminal velocity for a capsule on Mars is supersonic. You would hit the ground before you slowed enough to be able to fire retro-rockets.)

    The only alternative is to have enough fuel in Mars orbit to do a retro-burn that virtually zeros the orbital velocity *before* you enter

    --
    nobeta

    -
    - ›

      Re:I think its gonna be a long long time (Score:2)

      by Jane Q. Public (1010737) Friend of a Friend on 2014-12-29 2:23 (#48688053)

The only alternative is to have enough fuel in Mars orbit to do a retro-burn that virtually zeros the orbital velocity before you enter the atmosphere. And, by definition, that takes as much fuel as it does to launch from the surface into orbit.

No. There is no "definition" here, unless you ASSUME you are beginning from an orbit in the first place. But why should that be necessary?

Tricky, I admit, to do it differently, but that doesn't violate any laws of physics.

Plus all the infrastructure necessary to refuel and launch that vehicle.

You are fixated on Earth gravity. It is vasly easier from Mars, and again there is no law that requires "refueling". Lower gravity gives enormous advantages. Look at the size of the engine of the old lunar lander vs. the size of the Saturn V, for example.

Granted, doing it different ways might be harder, in some ways. But you seem to be locked in to one mindset, which isn't even necessarily valid to start with.

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Jane/Lonny Eachus goes Sky Dragon Slayer (Score:2)

by khayman80 (824400) on 2014-12-29 10:04 (#48690691)
Homepage Journal

Jane, before you try to lecture people about orbital mechanics, you should first make sure you understand more fundamental concepts like "conservation of energy".

> > But net radiative power out of a boundary around the source = "radiative power out" minus "radiative power in", so the equation Jane just described also says:

> NO!!!!! As I have explained to you innumerable times now, you can also consider your heat source, by itself, that "sphere". The

> only NET radiative power out comes from the electrical power in. Further, the cooler walls do not contribute any of that NET power out. That's what net means. ***[Jane Q. Public, 2014-12-16]***

I've already pointed out that Jane's hopelessly confused about the word "net", but that's just one of the mistakes Jane packed into these few sentences.

Jane's also wrong to imply that energy conservation across one choice of boundary could somehow contradict energy conservation across another boundary choice. That's impossible. Many boundary choices are **inconvenient** but they all have to be **consistent**. Otherwise, how could we possibly tell which boundary choice was correct?

So Jane can't object to the simple energy conservation equation I derived by claiming that some other boundary choice would somehow contradict my equation. That's completely impossible, and if Jane doesn't understand that point then he should learn about conservation of energy: example (backup), example (backup), example (backup).

As you can tell after reading those introductions, here's how to apply conservation of energy. Draw a boundary around the heat source:

power in = electrical heating power + radiative power in from the chamber walls
power out = radiative power out from the heat source

Since power in = power out through any boundary where nothing inside is changing:

electrical heating power + radiative power in from the chamber walls = radiative power out from the heat source

I put the boundary **around** the heat source so the boundary is in vacuum. That's because radiation can't travel through opaque solids like the heat source. So the only way to obtain an energy conservation equation with radiative terms is to place the boundary **around** the heat source.

For example, I calculated the enclosing shell's inner temperature by drawing the boundary **within** the enclosing shell. This boundary was inside aluminum, so heat transfer through it was by thermal conduction, not radiation. Notice that even this boundary choice leads to a conduction equation where electrical heating power depends on the cooler chamber wall temperature. That's because all boundary choices have to be consistent. The resulting equations **can't** contradict each other unless one of them is wrong.

After I asked Jane to explain exactly where his boundary would be drawn, Jane replied:

> ... You can draw the boundary right around the heat source. Electric power comes in, radiative power goes out. There is no contradiction, and no inconsistency. ... ***[Jane Q. Public, 2014-09-15]***

Nonsense. I've repeatedly explained that my boundary is drawn **around** the heat source, so it's in vacuum and therefore contains radiative terms both for radiation going out **and** radiation going in.

Choosing to put the boundary somewhere else, like inside the heat source, leads to an energy conservation equation with conduction rather than radiative terms. But even those conduction equations agree that electrical heating power depends on the cooler chamber wall temperature. They can't contradict each other. Putting the boundary somewhere else might be inconvenient, but it couldn't possibly contradict the fact that electrical heating power depends on the cooler chamber wall temperature.

> My energy conservation equation is this: electrical power in = (epsilon * sigma) * T^4 * area = radiant power out ***[Jane Q. Public, 2014-10-08]***

Once again, Jane's wrong. There is literally **no choice** of boundary which will lead to his absurd equation. Once again, it really sounds like Jane opened a textbook and found "radiative power out per square meter = (e*s)*T^4" and simply assumed that "radiative power out" is just a fancy way of saying "electrical heating power".

At least, that's the most charitable explanation. Once again, I'm trying to rule out less charitable explanations like the disturbing possibility that Jane isn't honestly confused about basic thermodynamics. Maybe Jane/Lonny Eachus has simply betrayed humanity by deliberately spreading civilization-paralyzing misinformation.

Jane/Lonny Eachus could help convince posterity that he was just honestly confused by thinking carefully about conservation of energy, explaining exactly where his boundary lies, and **carefully** listing **all** the power going in and out of that boundary.

Or Jane/Lonny Eachus could help convince posterity that he's betrayed humanity by continuing to spread civilization-paralyzing misinformation.

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Re:Jane/Lonny Eachus goes Sky Dragon Slayer (**Score:2**)

by Jane Q. Public (1010737) Friend of a Friend on 2015-01-01 12:13 (#48712759)

Jane, before you try to lecture people about orbital mechanics

First, you MISREPRESENTED my words again. While I admit that I did write this post very coherently -- mea culpa -- it was NOT about "orbital mechanics". It was about non-orbital mechanics.

Yet again, you fail to grasp my meaning. Although in this particular instance, I can't honestly say I blame you much. I was not very clear about what I meant.

As for the rest: you lost that argument a long time ago. I am not going to re-argue it with you. I will just repeat what I've told you already, innumerable times:

Nonsense. I've repeatedly explained that my boundary is drawn around the heat source, so it's in vacuum and therefore contains radiative terms both for radiation going out and radiation going in.

The equation for radiative power output of a gray body in vacuum is as I stated long ago. No NET incoming radiation from cooler bodies is absorbed, therefore no NET radiation is crossing your boundary FROM those cooler bodies. It comes in and goes right back out.

The proper equation for radiative power out DOES NOT INCLUDE that cooler incoming radiation, because no NET cooler radiation is absorbed in the first place, so it cannot be included as part of the radiative power output.

You are counting the radiation from the cooler body twice. Or, conversely, neglecting to account for its (NET) failure to be absorbed by the warmer body, and therefore exiting your sphere without being absorbed. Either way, you don't get to do that. It's bad math, and it's a violation of the First and Second Laws of Thermodynamics.

At steady-state, in purely radiative conditions (i.e., in vacuum with no conduction or convection), the equation for the radiative power output of a warmer body in the presence of cooler bodies does not depend on those cooler bodies. There is not even a variable for it in the equation. I repeat for the hundredth time: the radiative power output is related ONLY on the Stefan-Boltzmann equation sigma*epsilon(T^4). Nothing else is required. The equation is the same in the presence of cooler bodies as it is in the presence of no other bodies at all. Any textbook on radiative energy transfer will tell you this. As I have said before, I have 3 of them here which all disagree with you, and I haven't even bothered to check the 4th. I already knew the answer before checking the first 3.

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Re:Jane/Lonny Eachus goes Sky Dragon Slayer (Score:2)

by Jane Q. Public (1010737) Friend of a Friend
on 2015-01-01 12:19 (#48712787)
s/did write this post/did NOT write this post
Pardon the typographical error.
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The game of life is a game of boomerangs. Our thoughts, deeds and words return to us sooner or later with astounding accuracy.