

Re: ISS as Mars vehicle

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Bill the Cat wrote:

>>|Once ISS' electronics are fried by the Van Allen belts, it will be
>>|a dead hulk...

>>

>>|Can you describe the extent of the 'frying?' Is there going to be
>>|so much electrical charge that it arcs around the ship and melts
>>|holes through it?

>

> No, nothing so spectacular.

Then I expect the ship to remain airtight if there aren't going to be holes burned into it.

> The semiconductors in the electronics will simply start glitching,
> become erratic, and finally stop working altogether due to
> accumulated radiation damage.

|

|The interesting distinctions come when you consider the other equipment
|*controlled* by the electronics; e.g. when the solar array drive
|electronics die, the solar arrays can no longer be pointed at the sun
|and so everything will be starved of power.

However, if the ISS is first given a nice spin – something that is generally incompatible with telescopes that are usually expected to maintain their focus on things – there ought to be a 'continuous' source of power from the solar panels. The starvation for power won't be from any lack of incidental solar radiation. There might be some malfunctioning from the radiation of the Van Allen Belts, but it will probably be from a series of voltage spikes, wouldn't it? A resistor goes here, a resistor goes there, and after a while a trace on a circuit board melts, shutting down that part of the component.

|Another example would be the thermal control system electronics; lose
|that and the rest of the electronics starts suffering thermal problems
|on top of the radiation problems.

If the ISS is first set to spinning nicely, it will arrive at an ambient temperature of some kind, before it reaches the Van Allen Belts. In what way would the radiation of the Van Allen Belts raise its temperature?