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Posted by Anonymous on Mon, 2015-09-28 07:25

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Is there friction in space?

Submitted by ctillery2 on 28 September 2015

As there is no air in space, there is no friction *due to air* in space. However, normal surface friction occurs whenever two surfaces rub together. So, even in space, when surfaces slide over each other there *is* friction.

In space, it is the lack of air that prevents air friction from occurring. This contributes significantly to the high speeds attainable by spacecraft when travelling through space. An object falling within the Earth's atmosphere reaches 'terminal velocity' when the air friction is

equal, and in the opposite direction, to the gravitational force on the object. The falling object will reach its maximum or 'terminal' speed and won't accelerate any further. In space, where there is no air and therefore no air friction, the concept of terminal velocity does not apply and objects can continue to accelerate faster and faster.

Spacecraft that 're-enter' the Earth's atmosphere, go from having zero (or very minimal) air resistance to maximum air resistance. Consequently, they experience a huge increase in temperature as a result of the increased air friction. Heat shields or ablation shielding must be built into spacecraft to cope with this. The space shuttle pilots re-entered the atmosphere at a very shallow angle in order to minimise the sudden impact of air friction after travelling in space at orbital speeds.

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