National Aeronautics and Space Administration

ACCELERATION

When we hear the word "acceleration," we think of something moving very quickly. In reality, the concept of acceleration doesn't depend on how fast an object moves. Rather, acceleration is defined as a change in velocity or direction of motion. An object moving at any speed can accelerate by increasing or decreasing its velocity, or by changing direction. It also dictates many characteristics of phenomena in space.

DEFINITION: the change of velocity of an object over time.

UNITS: meters/seconds2 (m/s2), miles/hour/second (mi/hr/s), kilometers/hour/second (km/hr/s)

COSMIC EXAMPLE

B1509: The gravitational acceleration on the surface of a neutron star is about a trillion times that on Earth. About three trillion m/s^2

At the center of this image is a very young, rapidly spinning neutron star which is spewing energy out into the space around it.

EVERYDAY EXAMPLE

Porsche 918 Spyder: Performance of cars is often measured in their ability to accelerate from 0 to 60 mph. 12.3 m/s^2

OLYMPIC EXAMPLE

Hockey: Slapshots are the hardest and fastest ways to move a puck in hockey. 1230 m/s^2

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