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## Levitation in Our Life

Levitation is the process by which an object is suspended by a physical force against gravity, in a stable position without a solid physical contact. A number of different techniques have been developed to levitate a matter, including the aerodynamic, magnetic, acoustic, electromagnetic, electrostatic, gas film, and optical levitation method. For levitation on Earth, first, a force is required to be directed vertically upwards and equal the gravitational force, second, for any small displacement of the levitating object, a returning force should appear to stabilize it. The stable levitation can be naturally achieved by, for example, magnetic or aerodynamic force.

Techniques of levitation are useful tools in physics research. For example, levitation methods are useful for high-temperature melt property studies because they eliminate the problem of reaction with containers and allow deep undercooling of melt. The weightlessness conditions may be obtained by opposing gravity with a levitation force.

In transport vehicles, tool machines and conveyor systems are commonly used electromagnetically levitated and guided systems with linear motor propulsion. Passive guidance controls are normally used in real implementations of Maglev systems with linear induction motor propulsion to reduce construction costs and complexity of the transport system. The guidance force needed to keep the vehicles on the track is obtained by the levitation electromagnets with the help of particular shapes of the rail and clever placement of the electromagnets about it.

Scientists although levitated living biological specimens. Levitation of embryos of the frog *Xenopus laevis* used a large inhomogeneous magnetic field. The field gradient product required for levitation  $1,430 \text{ kG}^2/\text{cm}$ , consistent with the embryo's susceptibility being dominated by the diamagnetism of water and protein. Unlike any other earth-based technique, magnetic field gradient levitation of embryos reduces the body forces and gravity-induced stresses on them. In add, the use of large inhomogeneous magnetic fields consider as a probe for gravitationally sensitive phenomena in biological specimens.

Today the levitation is one more branch of science at all. Scientists learn new methods how to levitate objects: animate and inanimate. In fact, our life will be more comfortable and practical in the near future.