



Physics Department seminar
DIPARTIMENTO DI FISICA, VIA CELORIA 16, MILANO

Aula A in presence and streaming

<https://fisica-unimi.zoom.us/j/93690066082>

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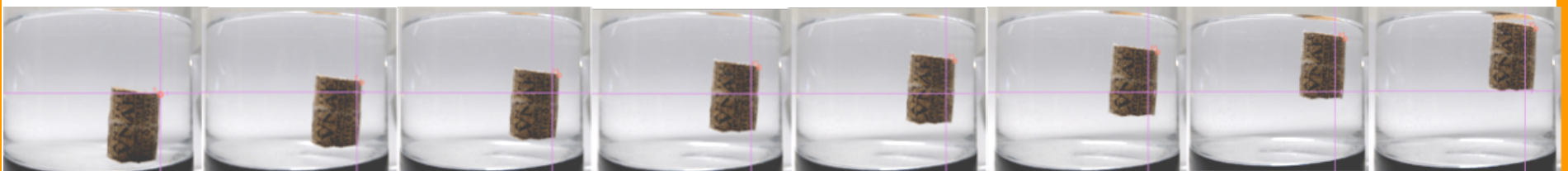
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**Levitation, oscillation and wave propagation
in a stratified fluid ***

Levitation of macroscopic objects occurs when a body floats in stable equilibrium inside a fluid. This puzzling phenomenon has fascinated humankind for a very long time and is still the topic of cutting-edge research works. It hardly occurs spontaneously in nature and is extremely difficult to observe on Earth due to the presence of gravity. However, a condition similar to levitation may occur in a stably stratified fluid. Under these conditions, an object can stay at rest at a height where its density and that of the fluid are perfectly matched. When this object is moved from its position, a restoring force tends to bring it back to the initial place and the body oscillates and emits mechanical waves in the surrounding fluid. Even more surprising is the case of a body, initially at rest that suddenly starts to rise as pushed by an invisible force. This phenomenon may occur when an object is placed in a fluid where a concentration gradient is developing in time.

In this talk we will discuss a simple but intriguing experiment done with everyday objects that allows to show such a sudden levitation phenomenon and is able to catch many aspects related to the physics of a stratified medium, such as the Brunt-Väisälä oscillations occurring in the atmosphere and in stars, and the propagation of internal gravity waves inside the stratified medium.



* *Marina Carpineti et al 2021 Eur. J. Phys. 42 055011*

Students are cordially invited – Contact silvia.leoni@mi.infn.it