

- The apparatus can be used to compare the moment of inertia of different objects, helping students understand how factors like mass distribution, shape, and size influence rotational inertia.



## STEFAN CONSTANT

The **Stefan constant** (often denoted as  $\sigma$ ) is a physical constant used in the Stefan-Boltzmann law, which relates the total energy radiated per unit surface area of a black body to the fourth power of its temperature. The Stefan-Boltzmann law is crucial in thermodynamics and the study of radiative heat transfer.

### Significance in Physics Labs

In a physics lab, the Stefan constant is essential in experiments involving thermal radiation, heat transfer, and black-body radiation. Key applications include:

1. **Measuring Radiative Heat Transfer:** It helps in calculating the energy radiated by heated objects, which is useful in studies of heat emission and absorption.
2. **Studying Black Body Radiation:** It is foundational for experiments exploring Planck's law and Wien's displacement law, which are related to the emission of electromagnetic radiation by objects at different temperatures.
3. **Applications in Astrophysics:** The law is used in determining the temperature and luminosity of stars by treating them as approximate black bodies.