Answer on Question #65562-Physics-Mechanics-Relativity

It is observed that all bodies sliding down a frictionless inclined plane have the same acceleration. How does it happen? Explain.

Answer

The bodies slide down a frictionless inclined plane when only one force acts on it – the weight. From the Second Newton's law:

$$F = ma,$$

where $F = W \sin \alpha = mg \sin \alpha$ is the projection of the weight on the plane. Thus,

$$a = g \sin \alpha.$$

The acceleration is constant for a given angle of incline.