

Answer on Question #60256-Physics-Mechanics-Relativity

A particle of mass m is projected with velocity V making an angle of 45 degree with the horizontal. When the particle lands on the level ground the magnitude of the change in its momentum will be?

Solution

The horizontal component of momentum of projectile doesn't changes. So,

$$\Delta P = \Delta P_{vertical} = [mv \sin(-45) - mv \sin 45] = 2[mv \sin 45] = 2mv \frac{1}{\sqrt{2}} = \sqrt{2}mv.$$

Answer: $\sqrt{2}mv$.

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