

4 In a popular movie, a man wearing a metallic robotic suit is able to fly by ion thrusters which expel ions downward from the suit's feet. If the total mass of the robotic suit with the man inside is 250 kg and the speed of the ion stream exiting the suit is $30,000 \text{ m s}^{-1}$, determine the mass of the ions that must leave the suit per unit time for it to hover above ground.

A 0.0010 kg s^{-1}

B 0.082 kg s^{-1}

C 1.3 kg s^{-1}

D 24.5 kg s^{-1}