

If the mass of the sun decreases gravity is earth moving away from sun because of decreases in the gravity of sun?

Solution

Let the initial mass of the sun is M . The initial orbit of Earth is very similar to circle with radius R , the initial velocity of Earth around the Sun is v .

Let the mass of the sun after decreases of mass is M' . If $v < v_{escape} = \sqrt{\frac{2GM'}{R}}$, v_{escape} is new escape velocity in distance R from Earth, the new orbit of Earth will be ellipse with semi-major axis greater than R .

If $v = v_{escape} = \sqrt{\frac{2GM'}{R}}$, the new orbit of Earth will be parabolic, Earth will move away to infinity .

If $v > v_{escape} = \sqrt{\frac{2GM'}{R}}$, the new orbit of Earth will be hyperbolic, Earth will move away from to infinity too.

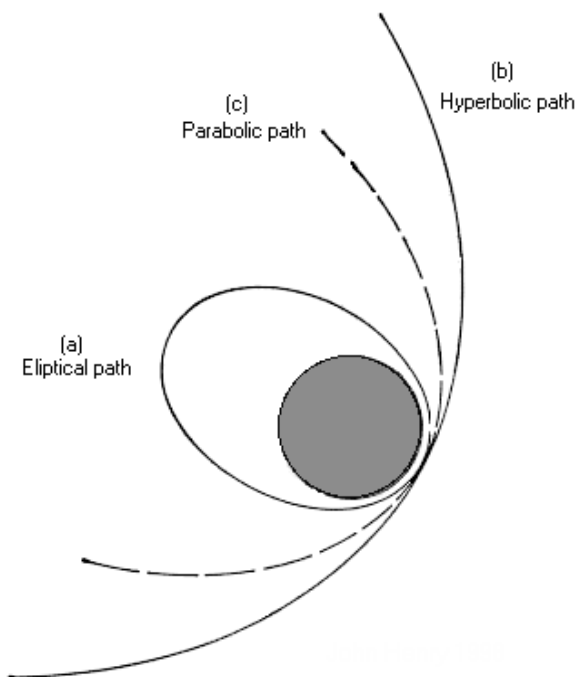


Fig-1: Types of paths