Theory point mass suspended may be described ideally as a A simple pendulum by a massless string from some point about which it is allowed to swing back and forth in a place.in radians is X L / , the arc length divided by the length of the pendulum or the radius of the circle in which the mass moves.When a simple pendulum is displaced from its equilibrium position, there will be a restoring force that moves the pendulum back towards its equilibrium position If the restoring force F is opposite and directly proportional to the displacement x from the equilibrium position, so that it satisfies the relationship F=−KX (1) then the motion of the pendulum will be simple harmonic motion and its period can be calculated using the equation for the period of simple harmonic motion T = 2??m k (2) It can be shown that if the amplitude of the motion is kept small, Equation (2) will be satisfied and the motion of a simple pendulum will be simple harmonic motion, and Equation (2) can be used The restoring force depends on the gravitational force and the displacement of the mass from the equilibrium position.Similarly, the period is the inverse of the frequency, T = l/f The maximum distance that the mass defined as is (A) he amplitude T − is displaced from its equilibrium position.time that it takes to make one complete defined the is period(T) − oscillation is of the oscillations is the number of oscillations that) f (The frequency− occur per unit time and is the inverse of the period, f = 1/T.The gravitational force can be resolved into two components, one along the radial direction, away from the point of suspension, and one along the arc in the direction that the mass moves.The component of the gravitational force along the arc provides the restoring force F and is given by F = −mgsin?is the angle the pendulum is displaced the minus sign indicates that the force is opposite to the displacement.Consider Figure 1 where a mass m is suspended by a string of length l and is displaced from its equilibrium position by an angle ?The restoring force is then given by F = −mg X L (5) and is directly proportional to the displacement x and is in the form of Equation (1) where K = − mg L .If a pendulum is set in motion so that is swings back and forth, its motion will be periodic.measured in radians so that Equation (3) can be written as F = −mg?Substituting this value of k into Equation (2), the period of a simple pendulum can be found by T = 2??L g (6).(3) where g is the acceleration of gravity ?For small amplitudes where ?

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