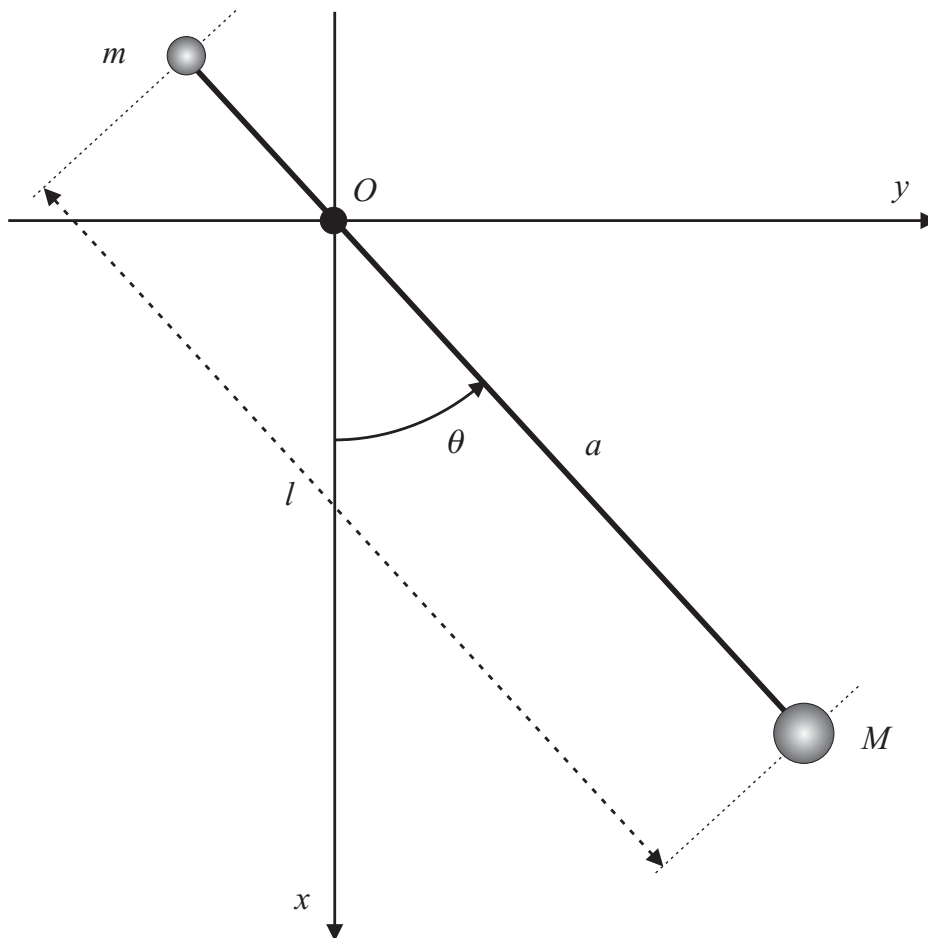


Mekanik II M2, 5C1140

Hand in assignment 2, HT 2005

A plane pendulum consists of a light rod with two small balls at the ends. They have mass M and m respectively. The rod has a total length l and is mounted so that it can rotate freely about a horizontal axis through the point O which is situated a distance a from the ball M .

Determine the distance a so that the frequency of the pendulum is maximized. Assume small amplitude.



Hints: Calculate the frequency squared ω^2 of the pendulum and determine its maximum as a function of a . This gives a quadratic equation. Only one of the roots is physical.

Answer: If you put $M = 4m$ in your answer you should get $a = 3l/5$. Use this to check your formula for $a = a(l, m, M)$.

The solutions, which must have explanative *text* in English, are intended to start from general laws and definitions. All essential steps in the calculations must be included.

Mark the solutions with your *name* and number as well as *my name* (Hanno Essén). They must be *tidy* and easy to read, as well as correct.

The last day for handing in this assignment is Thursday, September 22.