

6. STRING-COUPLED MASSES (5 points) —
Aleksi Kononen.

Two small masses m are connected and hung between walls by weightless strings as pictured below. The acceleration due to gravity is g . All oscillatory motion is assumed to have a small amplitude and the system is always in one of its normal modes (i.e. the oscillations are sinusoidal).

i) (2 points) Find ω_1 , the angular frequency of in-phase oscillations (by which the oscillation phases of the both masses are always equal), perpendicular to the plane of the figure.

ii) (3 points) Find ω_2 , the angular frequency of anti-phase oscillations (by which the oscillation phases of the both masses are always opposite), in terms of ω_1 .

