Problem F

A circular hoop of mass m and radius R hangs from the ceiling, supported by three wires of length l. The wires are attached to the hoop at evenly spaced 120° intervals around the circle. They are attached to the ceiling so that when the hoop is in equilibrium the wires are exactly vertical. Determine the frequency of small oscillations of the hoop about equilibrium.

Comment on your result. You should notice something familiar about it. How would it change if you used four equally space wires instead of three?