$[\mathrm{mex}74]$ Cone on the roll

A cone of mass M, height h, and angle 2α at the apex rolls without slipping on a horizontal plane. As it rolls in a circle about its apex, the cone rotates with angular velocity Ω about the figure axis. Calculate the total kinetic energy of the cone. Express the result as a function of M, h, α, Ω .

Solution: