

# 1 Centrifuge

A circular cylinder of radius  $R$  rotates about the long axis with angular velocity  $\omega$ . The cylinder contains an ideal gas of atoms of mass  $M$  at temperature  $T$ . Find an expression for the dependence of the concentration  $n(r)$  on the radial distance  $r$  from the axis, in terms of  $n(0)$  on the axis. Take  $\mu$  as for an ideal gas.