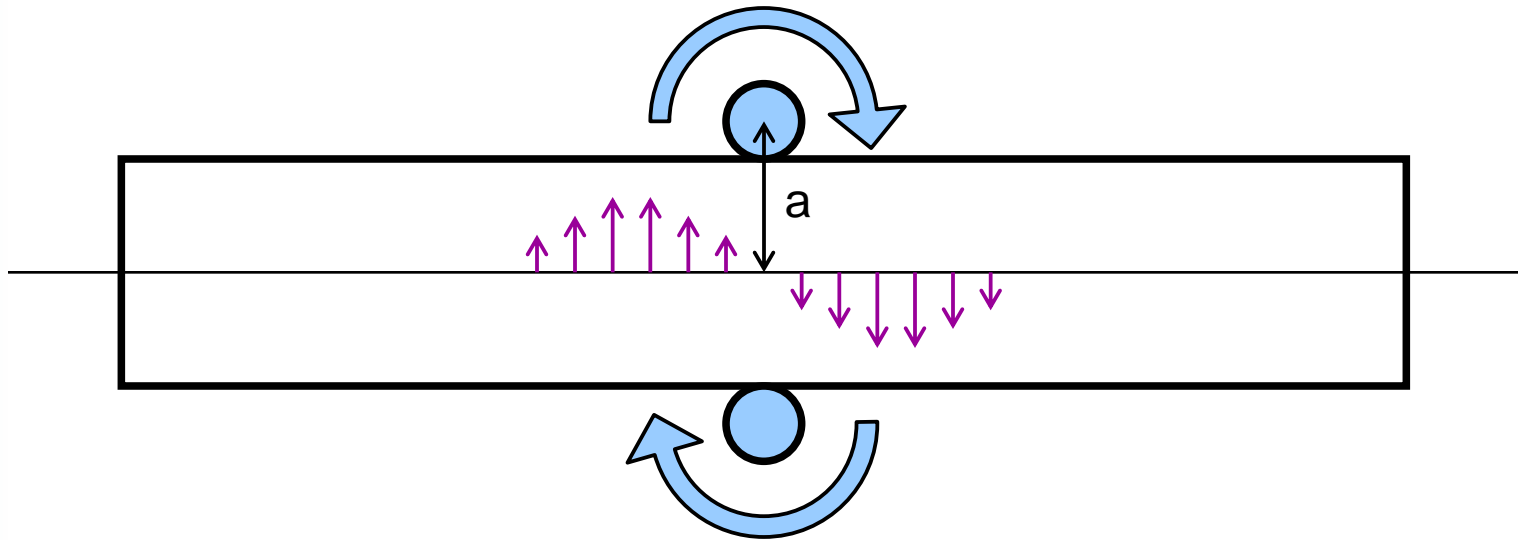


# Horizontal magnet problem

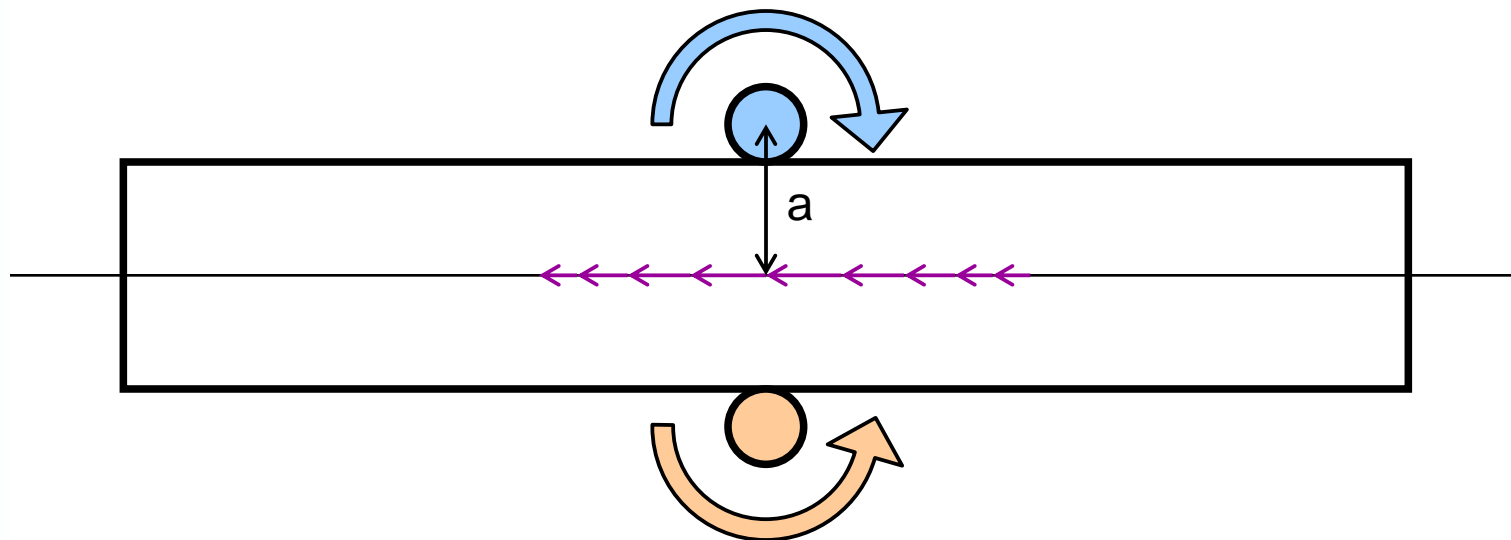
- Getting vertical B field requires same-direction current windings (nearby)



- By proportional to  $x/(a^2+x^2)$

# Horizontal magnet variation

- Getting horizontal B field requires opposite current windings and is easier



- $B_x$  proportional to  $a/(a^2+x^2)$

# Vertical magnet

- But now the field is in the wrong direction!
- That's OK, rotate the magnet
- The dipole field is there
- But what sort of focussing does this magnet give?

