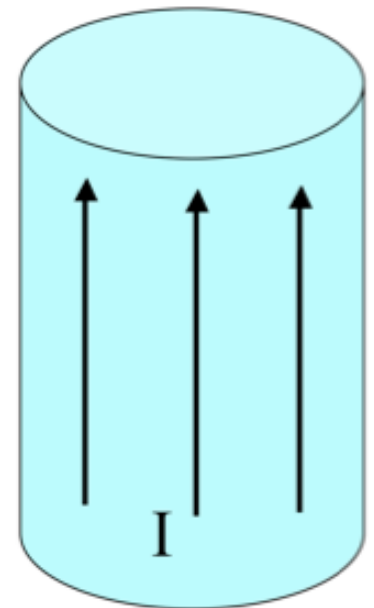


Predict the results of the following experiment: a paramagnetic bar and a diamagnetic bar are pushed inside of a solenoid.

- A. The paramagnet is pushed out, the diamagnet is sucked in
- B. The diamagnet is pushed out, the paramagnet is sucked in
- C. Both are sucked in, but with different force
- D. Both are pushed out, but with different force

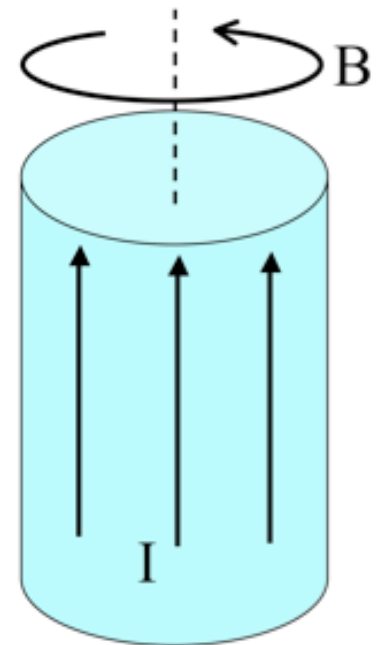
A very long aluminum (paramagnetic!) rod carries a uniformly distributed current I along the $+z$ direction. What is the direction of the bound volume current?

- A. \mathbf{J}_B points parallel to I
- B. \mathbf{J}_B points anti-parallel to I
- C. It's zero!
- D. Other/not sure



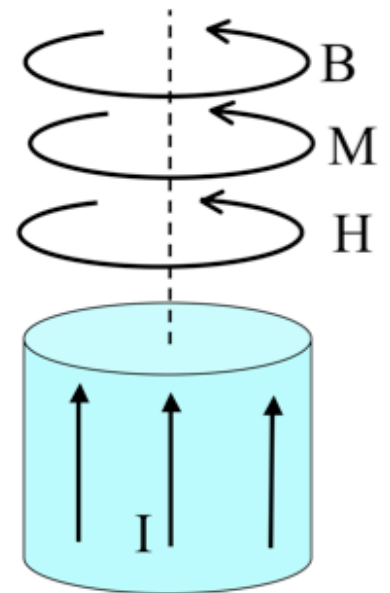
A very long aluminum (paramagnetic!) rod carries a uniformly distributed current I along the $+z$ direction. We know \mathbf{B} will be CCW as viewed from above. (Right?) What about \mathbf{H} and \mathbf{M} inside the cylinder?

- A. Both are CCW
- B. Both are CW
- C. \mathbf{H} is CCW, but \mathbf{M} is CW
- D. \mathbf{H} is CW, \mathbf{M} is CCW
- E. ???



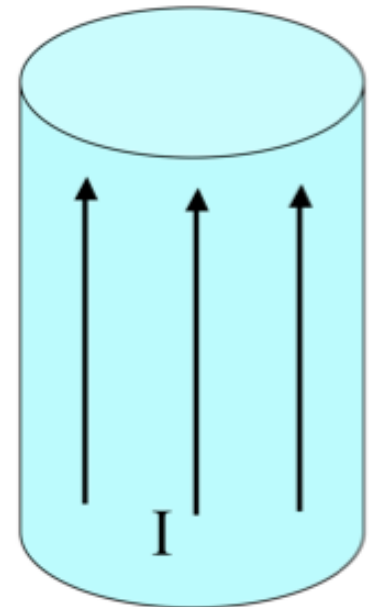
A very long aluminum (paramagnetic!) rod carries a uniformly distributed current I along the $+z$ direction. What is the direction of the bound volume current?

- A. \mathbf{J}_B points parallel to I
- B. \mathbf{J}_B points anti-parallel to I
- C. It's zero!
- D. Other/not sure



A very long aluminum (paramagnetic!) rod carries a uniformly distributed current I along the $+z$ direction. What is the direction of the bound surface current?

- A. \mathbf{K}_B points parallel to I
- B. \mathbf{K}_B points anti-parallel to I
- C. Other/not sure



For linearly magnetizable materials, the relationship between the magnetization and the H-field is,

$$\mathbf{M} = \chi_m \mathbf{H}$$

What do you expect the sign of χ_m to be for a paramagnetic/diamagnetic material?

- A. para: $\chi_m < 0$ dia: $\chi_m > 0$
- B. para: $\chi_m > 0$ dia: $\chi_m < 0$
- C. Both positive
- D. Both negative