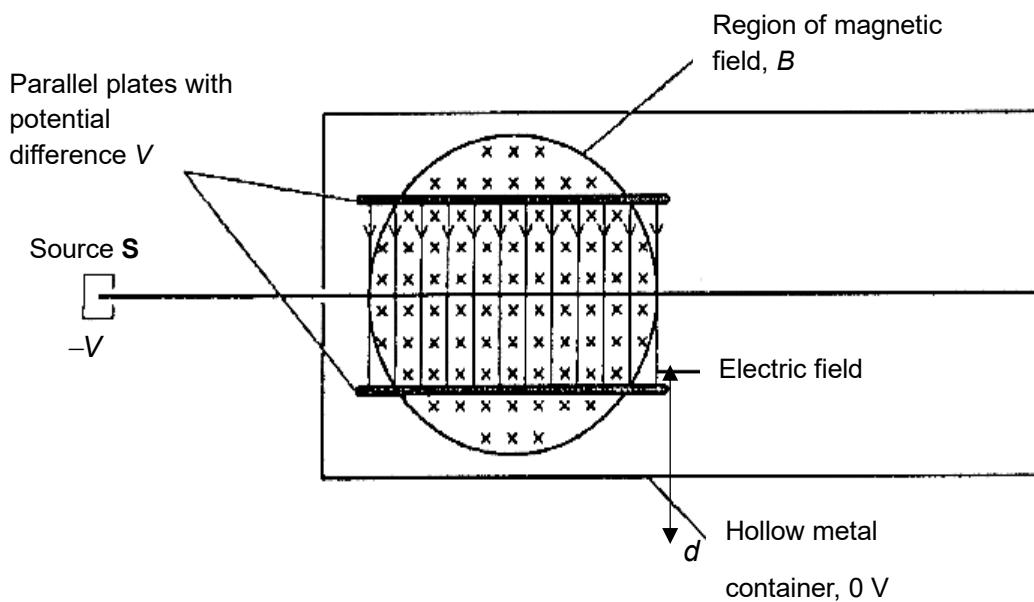


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A part of a mass spectrometer is shown in the figure below. Negative ions are generated at the source S, which is at a potential of $-V$ with respect to the hollow metal container. Inside the container, there are parallel plates separated by distance d and a uniform magnetic field B is applied to the region between the parallel plates.



If the potential difference between the parallel plates is V , what is the charge to mass ratio of the ions that can pass through the fields undeflected?

A

$$\frac{V}{2B^2d^2}$$

B

$$\frac{2V}{B^2d^2}$$



C

$$\frac{2B^2d^2}{V}$$

D

$$\frac{B^2d^2}{2V}$$