



**13.9** ABCDEFGH is a hollow cube made of an insulator (Fig. 13.4). Face ABCD has positive charge on it. Inside the cube, we have ionized hydrogen.

The usual kinetic theory expression for pressure

- (a) will be valid.
- (b) will not be valid since the ions would experience forces other than due to collisions with the walls.
- (c) will not be valid since collisions with walls would not be elastic.
- (d) will not be valid because isotropy is lost.

$H^+$  ion inside the cube will experience electrostatic repulsive force due to the <sup>positive</sup> charge present on the face ABCD in addition to the force due to collision with the container walls. Thus, kinetic theory is not applicable. Also, the isotropy is lost due to positive charge on face ABCD.

Thus, options (b) and (d) are correct