

M09E.1 - Cavity Dynamics (J94E.1)

Problem

A cavity with perfectly conducting walls is formed by the planes $x = y = z = 0, x = y = 3a, z = 2a$. This cavity is sawed in two along the plane $z = a$. The cavity is excited in one of the modes which has the lowest frequency in view of the cut.

- Identify this mode and give its frequency.
- Calculate the average force tending to separate the two halves in terms of the maximum electric field E_0 .

