

SPHERICAL CAVITIES

Two spherical cavities, of radii a and b , are hollowed out from the interior of a (neutral) conducting sphere of radius R , as in the figure below. At the center of each cavity a point charge is placed — call these charges q_a and q_b .

- (a) Find the surface charges σ_a , σ_b , and σ_R .
- (b) What is the field outside the conductor?
- (c) What is the field within each cavity?
- (d) What is the force on q_a and q_b ?
- (e) Which of these answers would change if a third charge, q_c , were brought near the conductor?

