

USEFUL RESOURCES

The updates, homework assignments, and useful links for APC can be found on SchoolNova's web page:
https://schoolnova.org/classinfo?class_id=2252&sem_id=74

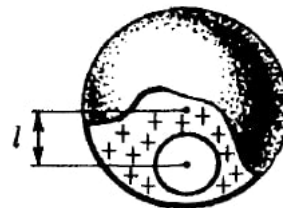
The practical information about the club and contacts can be found on the same web page.

TODAY'S MEETING

We solved most of the assignment on Coulomb's law. The next topic is Gauss's law.

NEW HOMEWORK

- The electric flux of the electric field through a plane surface uniformly charged with surface charge density σ is Φ . What is the electric force acting on the plate in the direction perpendicular to its surface?
- (a) With what force does an electric charge q act on a uniformly charged infinite plane? With what force does the plane act on the charge? What is the electric field strength produced by the plane? The surface charge density of the plane is σ .
 (b) With what force does a charge q , placed at the center of a tetrahedron, act on each face of the tetrahedron? The surface charge density of the faces is σ .
- Using Gauss's law find the electric field
 - of a uniformly charged sphere of radius R with charge Q both inside and outside of the sphere;
 - of a uniformly charged straight infinite thread with linear charge density λ ;
 - of a uniformly charged infinite plane with surface charge density σ ;
 - of a uniformly charged ball of radius R with volume charge density ρ both inside and outside of the ball.
- Find the electric field between two infinite planes uniformly charged with surface densities $\pm\sigma$. What is the electric field outside the planes? What if both planes are charged with the same surface density σ ?
- A spherical cavity of radius r is cut out of a uniformly charged sphere of radius R . The center of the cavity is located at a distance l from the center of the sphere. The volume charge density is ρ . Find the electric field strength along the line passing through the center of the cavity and the center of the sphere. Show that the electric field inside the cavity is uniform.



- Using Gauss's law prove that a system of charges interacting with only electrostatic forces cannot be in stable equilibrium.

FOR THE NEXT MEETING

IMPORTANT: The next club's meeting is at 2:40pm, in person, on Sunday, **March 15**.