PHYS 5C:

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I.

- Conductors are equipotentials.

  Also generally equipotential surfaces $\perp$E

- A Gaussian surface is a surface that uses Guass. Flux through a close surface is equal to charges.

- Charge metal sphere. Radius R and charge Q. Set v=0 at r->∞What is v at center of sphere$(r=0)$? set $r=R$,so $v=\frac{Q}{4\pi\varepsilon_0 R}$

- $E=k\frac{Q}{r^r}$

- Ground can set V=0

  It is possible for a grounded conductor not to be neutral!

- Potential to any charge distrubition

  Discrete charges: $V=\int_{i=1}^{n} V_i \Rightarrow \frac{1}{4\pi\varepsilon_0}\sum_{i=1}^{n}\frac{Q_i}{r_i}$ (assume ref poistion $\to\infty$ and $V=0$)

- continous charge distrubitino

  $V=\frac{1}{4\pi\varepsilon_0}\int\frac{\mathrm{dq}}{r}$

- Dipole potential

  define eletric dipole moment: p=Ql

  $V=\frac{1}{4\pi\varepsilon_0}\frac{\mathrm{pcos}\theta}{r^2}$

- Can$'t$ always set $V\to 0$ at $r\to\infty$

  When charge distrubtion extends to ∞in some direction(s)

  example ∞ sheet of charge density σ. Set reference position at a finite distance

- If a charge q moves through potential difference V, then its KE changes by qV