Source: KBhPHYS201ElectricFields

1 | Conductors at Equilibrium

If the charges on a conductor are **stationary**, no electron flow within the conductor (so, it's **at equilibrium**)… This means that:

1) Net E-field *in* the conducting material must be zero
    - Because, uhh…., the conductor is stationary, meaning no electron flow
    - So, without electric flow, you know that there is no electrons flowing, which means no electric field
2) Any electrons that would exist would cluster at the surface of the conductor
    - At equilibrium, the electrons would want to be as far away from each other as possible, meaning that they would stick to the surface — to take advantage of the biggest perimeter/circumference
3) At the surface of the conductor, if any E-*field* is present, it must be perpendicular to the surface
    - If you have a horizontal component, the conductor would be, well, *conducting* electricity, making it rather not static. This horizonal component will push electrons in the conductor around until it doesn't exist
    - If the E-Field is perpendicular, because we are in the Physics Vacuum, no charges will flow because it can't flow out of the conductor into something else

The net electric field inside a neutral conductor must be 0 equilibrium (at which point it is stationary)

- A conductor at equlibirium would see electrons cluster at curves to maintain perpendicularity of e-Fields
    - Because there are more electrons towards the center and across the conductor to push all electrons towards the extremities before achieving equlibirium
    - If charges are evenly distributed instead of being concentrated on sharper corners, the now-unbalanced electrons will create horizonal components

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- PhET Exploration:
    - r0N: KBe20phys201retFieldsVoltagePhET
    - 'Moka: KBhPHYS201PHETElectricFields