

Badji- Mokhtar University -ANNABA Faculty of technology Computer science department & Electronics Department 1st year Computer sciences& automatics (2023-2024) Online courses Coursework Exercise 2 of Physics 2

Continuous distribution and electric dipole



Exercise 1:

- Let us considerate a wire AB of length 2d charged with a constant linear density $\lambda > 0$
- 1) Calculate the electric field \vec{E} and the potential V created on a point M located at a distance y of the wire
- 2) Deduce \vec{E} and V when M is located in the mediating plane of the wire AB
- 3) Deduce \vec{E} when the wire AB is of infinite length



Exercise 2:

A disk with center O and radius R carrying a constant and positive surface charge σ

- 1) Calculate the electric field and potential created at a point M of its axis OX, located at a distance x from the disk
- 2) What will the electric field \vec{E} be when the radius of the disk R tends towards infinity?



Exercise 3:

Consider an electric dipole having a dipole moment \vec{P} and a is the distance between its two charges –q and +q

- 1) Calculate the electric potential and field produced by the dipole at point as a function of p, θ and r, knowing that $a \ll r$.
- 2) Find the equation of equipotential surface

