

## ELEC 0041: Homework 2 - due on April 22 2022

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A 50Hz three-phase underground cable system is to be installed in a residential area, 1 m below a sidewalk. The nominal current to be carried by the cables is 400 A. The diameter of each conductor is 5 cm; the minimal distance between the conductors (center to center) is 8 cm.

You are asked to:

- Calculate the level of magnetic flux density at 1.5 m above the sidewalk, for both a flat and a trefoil arrangement of the conductors.
- Propose a practical shielding system to attenuate the maximum field level to  $0.4 \mu\text{T}$  at 1.5 m above the sidewalk.
- Comment on possible alternative strategies that could be used to reduce the field level without resorting to a shield.

By groups of two students, write a max. 5 page report (additional pages with figures and/or tables are allowed) where you present and comment your results. Send your report by email to [cgeuzaine@uliege.be](mailto:cgeuzaine@uliege.be) in PDF format together with your model files, bundled in a single .zip file. The file should be named: `hw2_lastname1_lastname2.zip`.