UNIVERSITY OF WINDSOR

Department of Electrical and Computer Engineering

Take-Home Exam

Write a software program, in any language (e.g., python, C, Java etc.) or system (Mathematica, Matlab, etc.) to solve for (a) inductance ,L_{tot}, (b) and capacitance, C, of the coaxial cable shown in Fig. 1.

The total inductance, L_{tot}, includes both internal, L_{in}, and external , L_{ext}, inductances ($L_{tot} = L_{in}$+L_{ext}). assume $\varepsilon_r = 1$ and $\mu_r = 1$.

Plot the capacitance, C, and the external inductance ,L_{ext}, as a function of b/a from 1. $1 < b/a < 10$ and show that $L_{ext}C = \mu\varepsilon$.

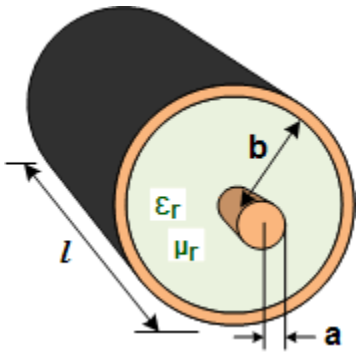

Fig. 1

The report must be in IEEE format (please refer to the posted template on the course website) with equations numbered, relevant citations made, figures and tables appropriately captioned, and a Bibliography. You must include your software as an appendix and comments within the code.