**COMPUTATIONAL ELECTROMAGNETISM WITH MATLAB**

**PHYSICAL QUANTITIES, SYMBOLS and UNITS**

**Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Symbol** | **S.I. Unit** | **Matlab symbol** |
| Speed of light | *c* = 2.9979x108 | m.s-1 | c |
| Permittivity of free space | = 8.854x10-12 | F.m-1 | eps0 |
| Relative permittivity  Dielectric constant |  |  | epsR |
| Permittivity of material |  |  | epsM |
| Permeability of free space | = 4x10-7 | H.m-1 | mu0 |
| Relative permeability |  |  | muR |
| Permeability of material |  |  | muM |
| Electric conductivity |  | S.m-1 | sigma |
| Magnetic loss |  | .m-1 | sigmaL |
| Electronic charge | e = 1.602x10-19 | C | e |
| Electric field  E-field |  | V.m-1 | E |
| Electric flux density  D-field |  | C.m-2 | D |
| Magnetic flux density  B-field |  | T | B |
| Electric current density |  | A.m-2 | J |
| Magnetic current density |  | V.m-2 | M |
| Arbitrary three-dimensional surface | *A* |  |  |
| Differential normal vector for surface area |  | m2 |  |
| Closed contour that bounds surface *A* |  |  |  |
| Differential length vector for contour *l* |  | m |  |