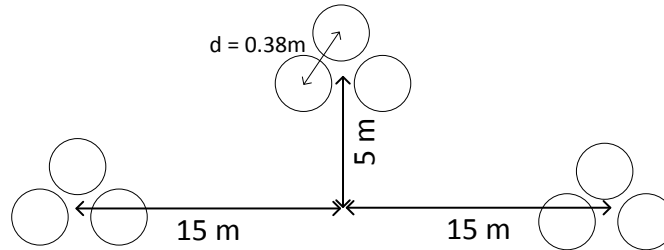
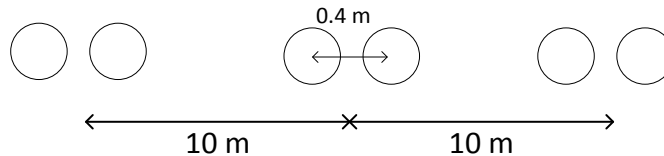


Tutorial 6

Problem 1: Find resistance per phase, inductance per phase and current carrying capacity (ampacity) per phase for 275km long Condor conductor in the following configuration. R is $0.072 \Omega/\text{km}$.



Problem 2: Figure below shows the conductor configuration of a completely transposed, three phase, 345 kV, 60 Hz transmission line with a two conductor bundle of 795 kcmil conductors. Bundle spacing is 0.4 m. Flat horizontal spacing is retained, with 10 m between adjacent bundle centers. Length of line is 200 km. (GMR of a 795 kcmil conductor is 0.0114 m, and radius of conductor is 0.0141m.)



- Calculate the total capacitance-to-neutral of one phase in F and the admittance-to-neutral in S.
- If the line voltage is 345 kV, determine the charging current in kA per phase and the total (three phase) reactive power in MVar supplied by the line capacitance.

The following problems are from Topic 5 - Part 2 (Transmission line models).

Problem 3: 765 kV rated line. $V_R = 765 \text{ kV}$ (line to line). $S_R = 2000 + j1000 \text{ MVA}$. $z = 0.0201 + j0.535 \Omega/\text{km}$, $y = j7.75 \times 10^{-6} \text{ S/km}$. Write the expression for $V(x)$.

Problem 4: 500 kV rated line. $R = 0.02 \Omega/\text{km}$, $x = 0.335 \Omega/\text{km}$, $y = j4.807 \times 10^{-6} \text{ S/km}$, length = 300 km. Find Z_c , γl , exact ABCD parameters, equivalent π model.