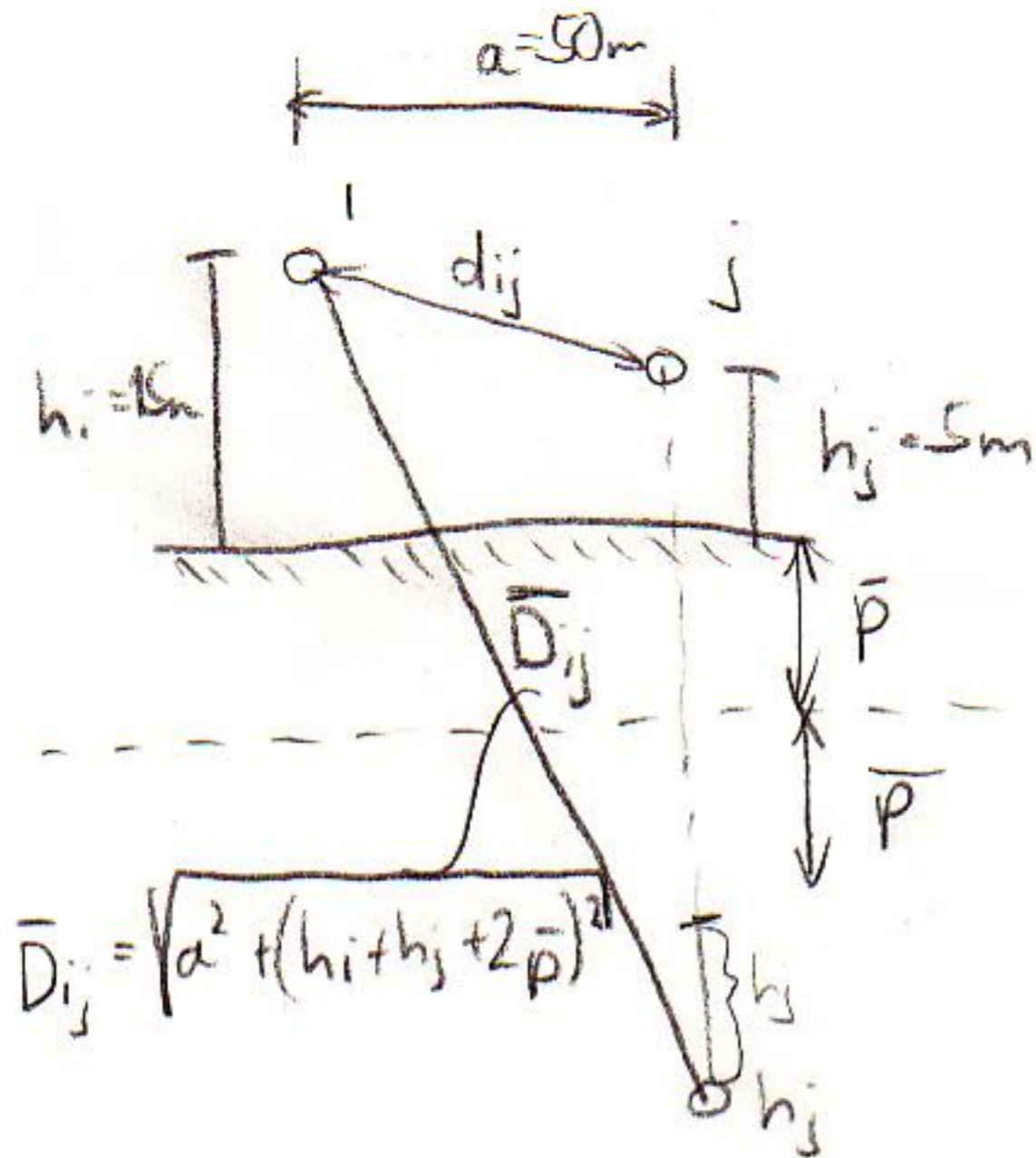


2007.04.10 kedd

XVI. Előadás (9. hét)



$$d_{ij} = \sqrt{50^2 + (15-5)^2} = 51\text{m}$$

$$\alpha = \sqrt{j\mu_0\omega\sigma} = \sqrt{\mu_0\omega\sigma} \angle_{45^\circ} \left[\frac{1}{\text{m}} \right]$$

$$\bar{p} = \frac{1}{\alpha} = \frac{1}{\sqrt{\mu_0\omega\sigma}} \angle_{-45^\circ} [\text{m}] = \frac{De}{1,852} \angle_{-45^\circ}$$

$$De = \frac{1,852}{\alpha} = 659 \sqrt{\frac{\sigma}{f}}$$

$$\bar{D}_{ij} = \sqrt{a^2 + (h_i + h_j + 2\bar{p})^2}$$

f	(behat. rendszer) De [m] 0,155De	$\frac{1}{\alpha}$ [m]	forrás 2p̄ (°) [m]	\bar{D}_{ij} [m] (grad)	Z _{ij} [Ω/km]
50Hz	932 ~120	505	711-j711	1020 / -0,77	0,0484 + j0,188 / 76,4°
5kHz (elhum)	93,2 ~10	50,5	71,1-j71,1	119 / -0,144	0,904 + j5,321 / 79,7°
500kHz (frekv. elsohat)	9,32 ~1	5,05	7,11-j7,11	56,64 / -0,0002	37,85 + j65,84 / 29,9°

$$Z_{ij} = j\omega 0,2 \cdot 10^{-3} \ln \frac{\bar{D}_{ij}}{d_{ij}}$$

$$\begin{aligned} \underline{50\text{Hz}} \quad \bar{D}_{ij} &= \sqrt{\frac{50^2}{2500} + \left(\frac{15+5+711-j711}{731} \right)^2} = \sqrt{1,045 \cdot 10^9 \angle_{-88,3^\circ}} = \\ &= 1020 \angle_{-44,1^\circ} = 1020 \angle_{-0,77} \end{aligned}$$

$$Z_{ij} = j314 \cdot 0,2 \cdot 10^{-3} \ln \frac{1020 e^{-j0,77}}{51} = j0,0628 (-j0,77 + \ln 20) =$$

$$\left(\ln e^{-j0,77} + \ln \frac{1020}{51} \right) = 0,0484 + j0,188 \frac{\Omega}{\text{km}}$$

komplex értékes
0,0495 + j0,183 Ω/km
Cargó - U_{eff}

5000 Hz $\bar{D}_{ij} = \sqrt{50^2 + (20 + 71,1 - j71,1)^2} = \sqrt{50^2 + (91,1 - j71,1)^2}$

$(115,56 \angle -37,9^\circ)^2$

$13354 \angle -75,9^\circ$

$Z_{ij} = j \frac{31400 \cdot 0,2 \cdot 10^{-3} \ln \frac{119}{51}}{6,28} e^{-j0,144} =$

$Z = 0,904 + j 5,321 \frac{\Omega}{\text{km}}$

$2500 + 3244 - j 12954$
 5744
 $114141 \angle -66,1^\circ$

4,95t j 3,786 \Leftarrow Carson-L

(\Rightarrow elleres!!!)

500 kHz $\bar{D}_{ij} = \sqrt{50^2 + (20 + 7,11 - j7,11)^2} = 56,64 \angle -3,45^\circ = 56,64 e^{-j0,0602}$

$Z_{ij}|_{500\text{kHz}} = j 1,257 \cdot 500 \ln \frac{56,64 e^{-j0,0602}}{51}$

$Z = 37,85 + j 65,84 = 75,95 \angle 29,9^\circ$

485 $+ j \omega 9,2 \cdot 10^5 \ln \left(\frac{9,3}{51} \right) \Leftarrow$ Carson-L

högfrenkv
 leve kisamir

