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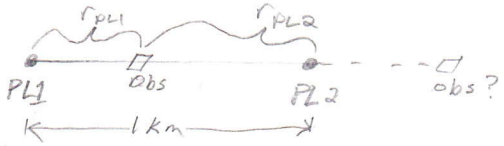
ASEN 5010
HW1

Problem 2 (M/E 1-4)



$\rho = r - b$ (b = clock bias)

a) $\rho_{PL1} = 550 = r_{PL1} - b$

$\rho_{PL2} = 500 = r_{PL2} - b$

$\Rightarrow$ subtract $\Rightarrow 50 = r_{PL1} - r_{PL2} \Rightarrow r_{PL1} = 50 + r_{PL2}$

between PLs: $r_{PL1} + r_{PL2} = 1\,km$

$r_{PL1} = 50 + 1000 - r_{PL1} \Rightarrow 2r_{PL1} = 1050 \Rightarrow r_{PL1} = 525$

$b = r_{PL1} - 550$

$\boxed{b = -25m}$

outside PLs: $|r_{PL1} - r_{PL2}| = 1\,km$

cannot be outside, as the given ρ's don't allow for it

b) $\rho_{PL1} = 400 = r_{PL1} - b$

$\rho_{PL2} = 1400 = r_{PL2} - b$

$\Rightarrow$ subtract $\Rightarrow -1000 = r_{PL1} - r_{PL2} \Rightarrow r_{PL1} = r_{PL2} - 1000$

between PLs

$r_{PL1} = 1000 - r_{PL1} - 1000 \Rightarrow r_{PL1} = 0$

$400 = -b \Rightarrow \boxed{b = -400m}$

outside PLs

can't be outside PLs, since obs. is @ PL1