Cycling Timing System

Patrick Bell
Emilio Gaudette
Eric Johnson

Advisor: Ramakrishna Janaswamy

MDR Presentation Handouts:

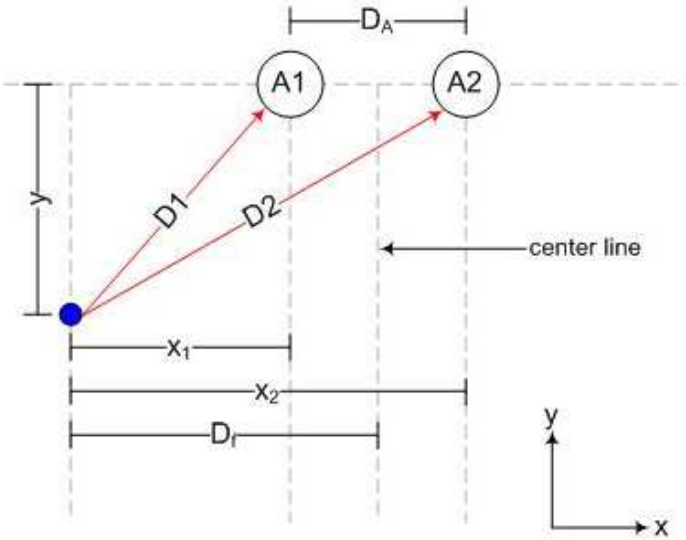
$$E = D2 - D1 = \sqrt{\left(x_2^2 + y^2\right)} - \sqrt{\left(x_1^2 + y^2\right)}$$

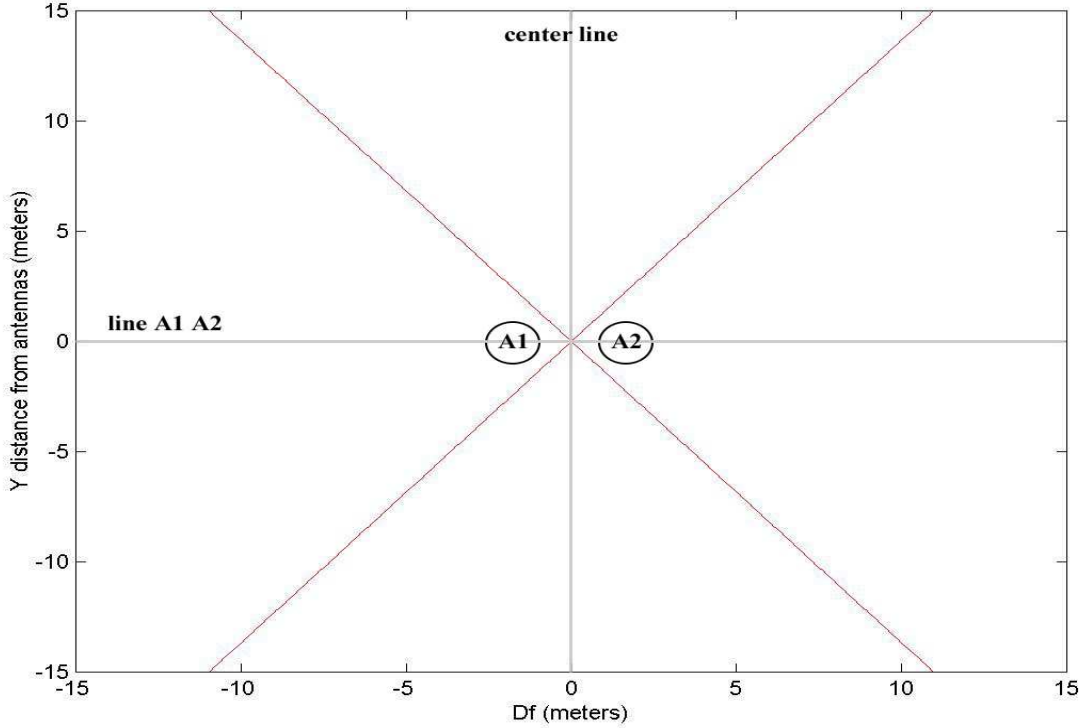
$$x_1 = D_f - \frac{D_A}{2}$$

$$x_2 = D_f + \frac{D_A}{2}$$

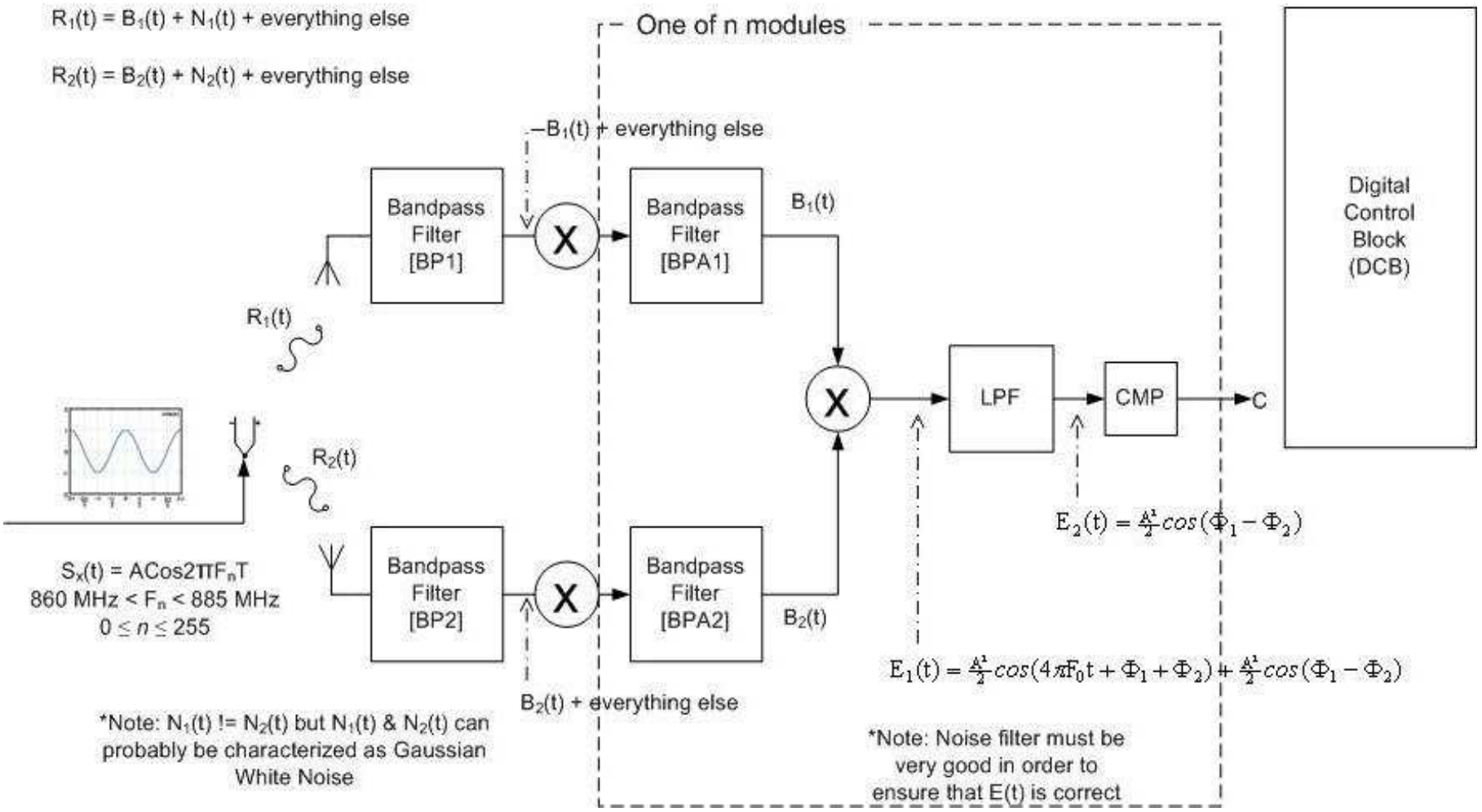
$$E = \sqrt{\left(D_f + \frac{\lambda}{8}\right)^2 + y^2} - \sqrt{\left(D_f - \frac{\lambda}{8}\right)^2 + y^2}$$

$$\phi_d = E\left(2\frac{\pi}{\lambda}\right)$$





Analog Receiver (AR)



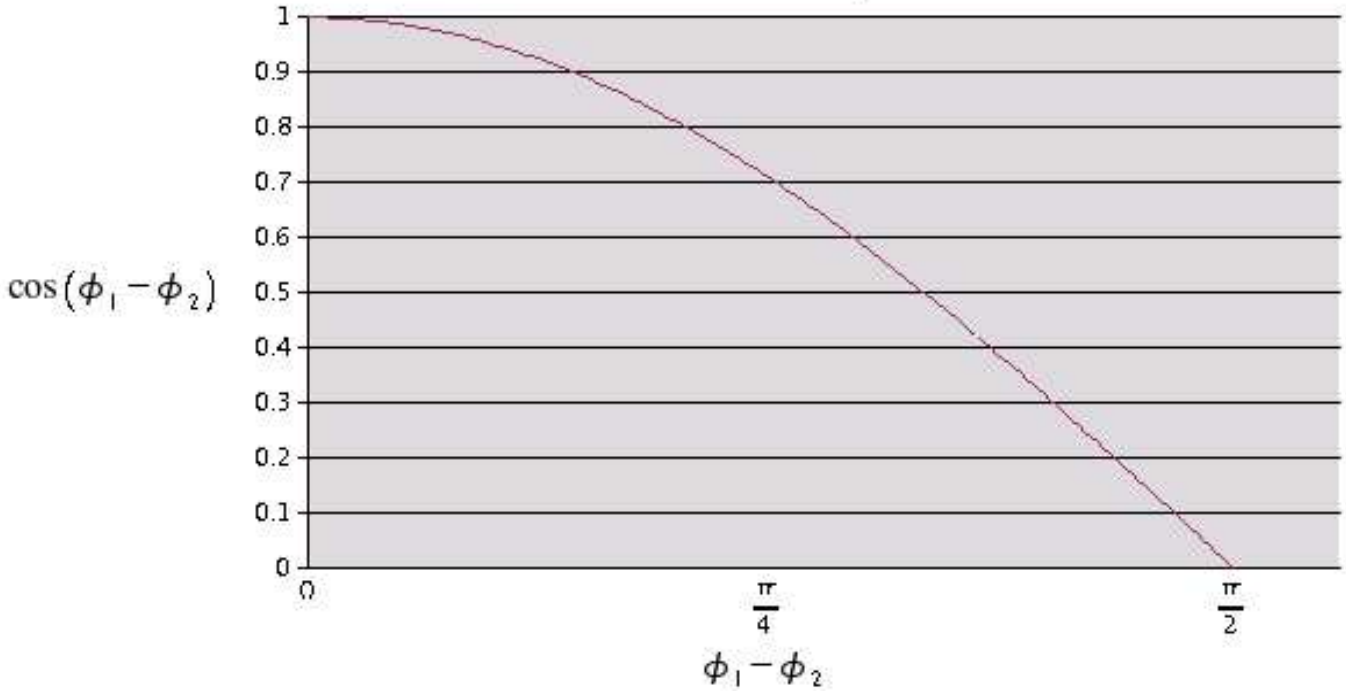
$$E1(t) = B1(t) * B2(t)$$

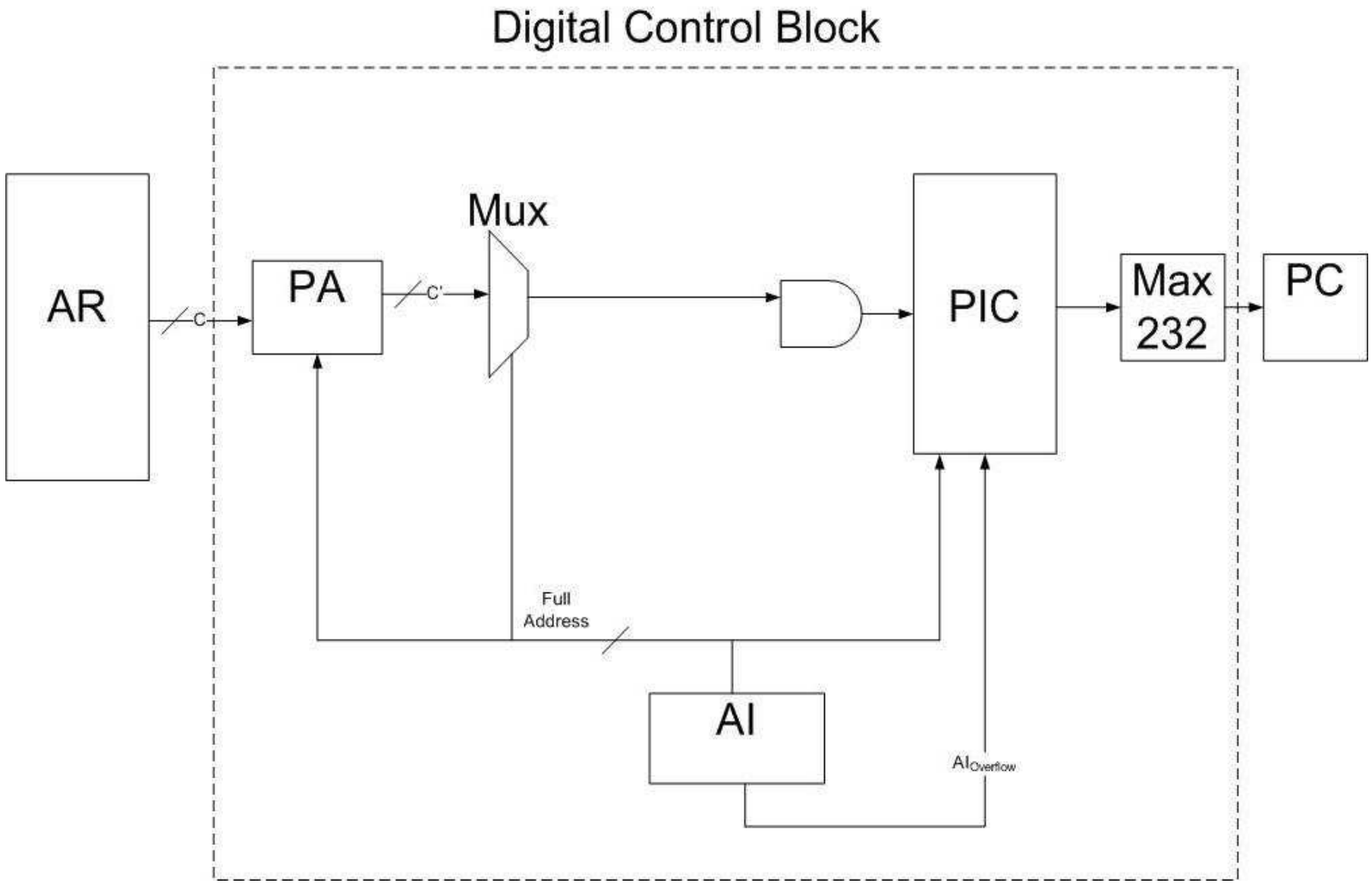
$$E1(t) = A^2 \cos(2\pi * Fn * t + \phi_1) * \cos(2\pi * Fn * t + \phi_2)$$

$$= \frac{A^2}{2} * \cos(4\pi * Fn * t + \phi_1 + \phi_2) + \frac{A^2}{2} * \cos(\phi_1 - \phi_2)$$

$$E2(t) = \frac{A^2}{2} * \cos(\phi_1 - \phi_2)$$

E2(t) as a function of phase difference




Digital Control Block
AR
C
PA
C'
Mux
PIC
Max
232
PC
Full
Address
AI
AI Overflow