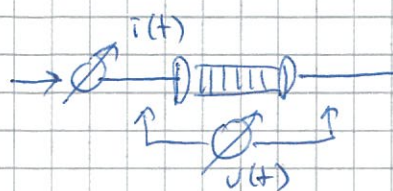
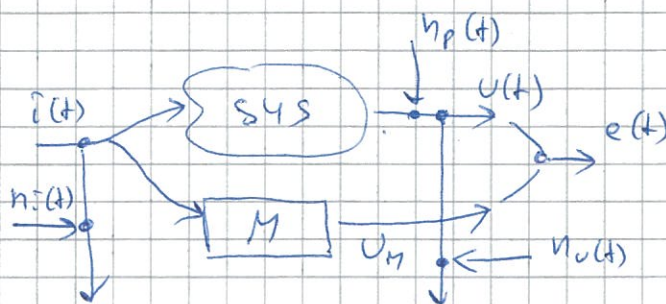


# III. RESISTANCE MEASUREMENT



- "TRUE" RESISTOR



NONLINEAR, DYNAMIC, ...

$$i(t) = 2g_m(u(t)) \sum |u(t)|^p$$

$p \approx 0.5$

- MODEL: LTI (Ohm's Law)  
(LINEAR REGRESSION)  
1 TERM

$$U_0 = R_0 i_0$$

$$U_M(t) = R i(t) = \theta_1 \phi_1(i(t)) = \underline{\theta}^T \underline{\phi}(i(t))$$

- Error:

(1)  $R(t) = \frac{u(t)}{i(t)}$        $e(t) = R(t) - R_0$

(2)  $u(t) - u_M(t) = u(t) - R i(t)$

(3)  $(i(t) - i_0)$   
 $(u(t) - u_0)$   
BUT  $u_0 = R_0 i_0 (!)$

$$e \rightarrow \sum e^2 \begin{cases} V \rightarrow \hat{R} \\ V \rightarrow \hat{R} \\ V \rightarrow \hat{R} \end{cases}$$

WHICH ONE  
IS THE BEST  
(BETTER?)

DIFFERENT ERROR  
- - - CRITERION  
- - - ESTIMATES