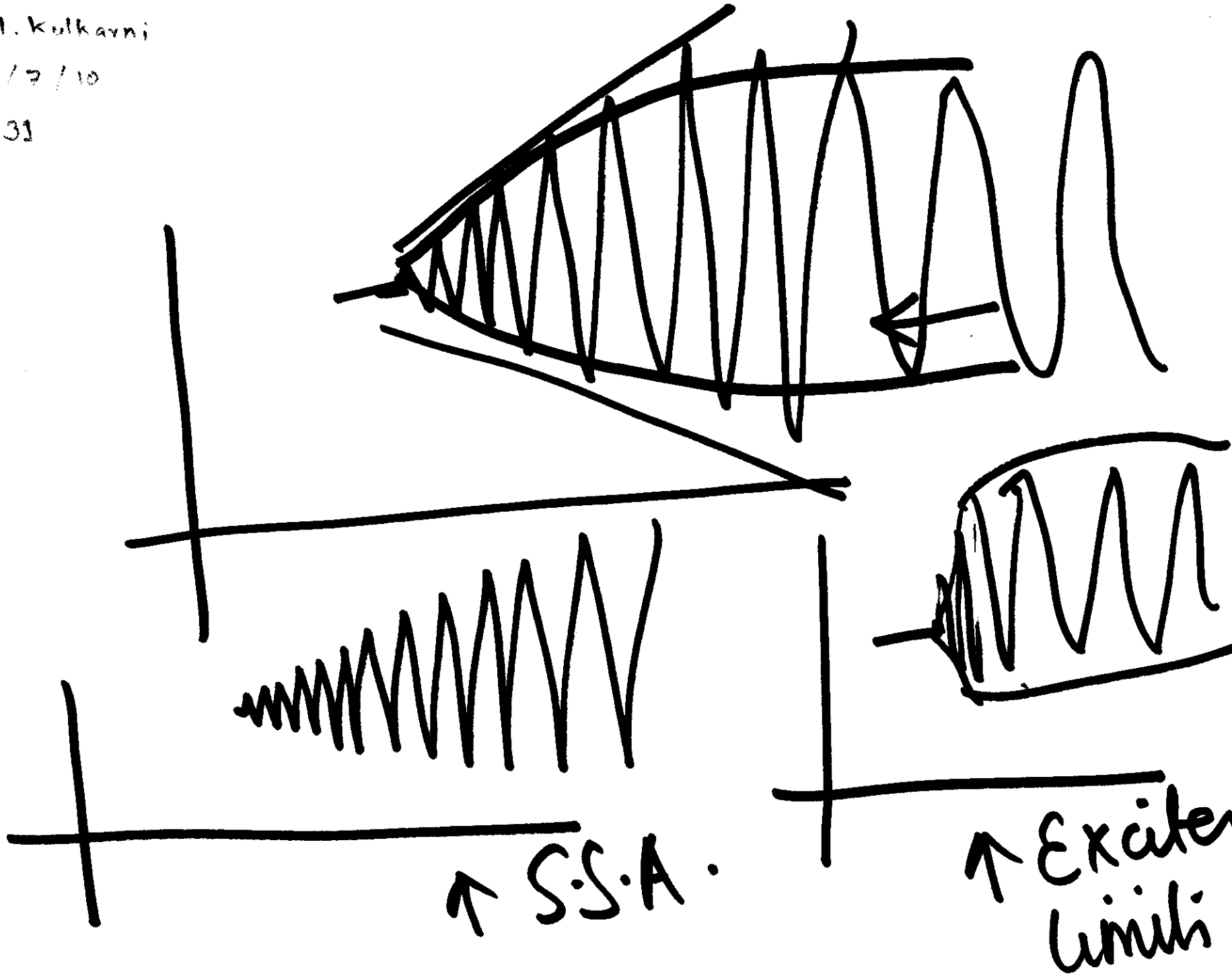
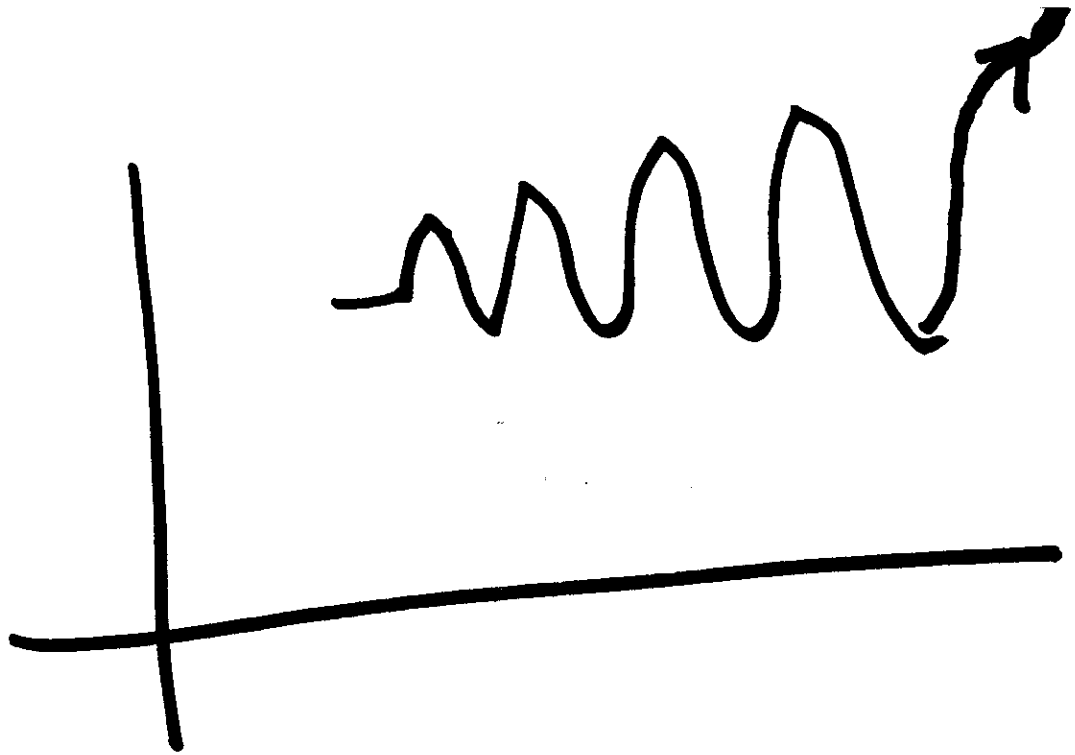
Prof. A. M. Kulkarni

Date : 16/7/10

Lec. No. 31



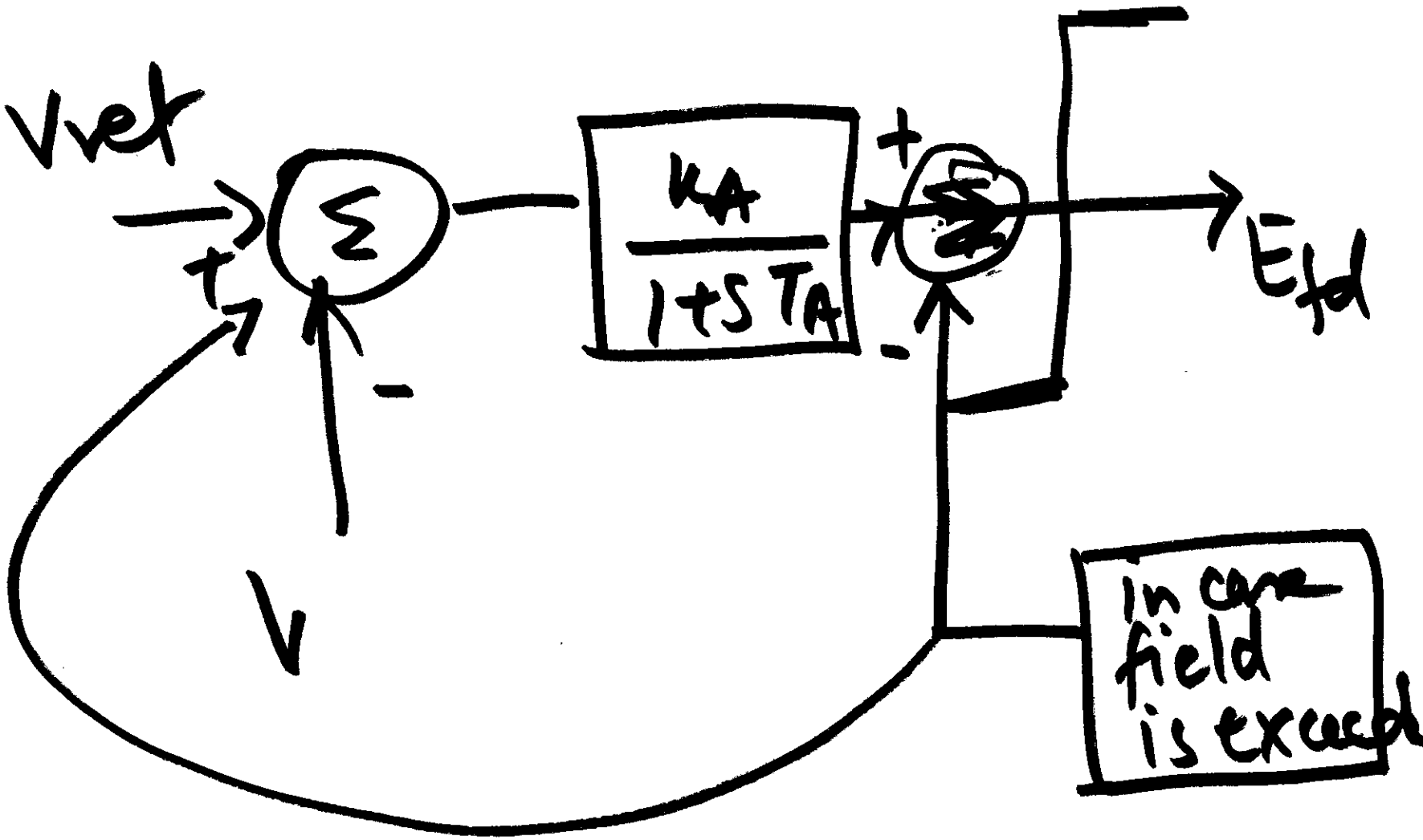


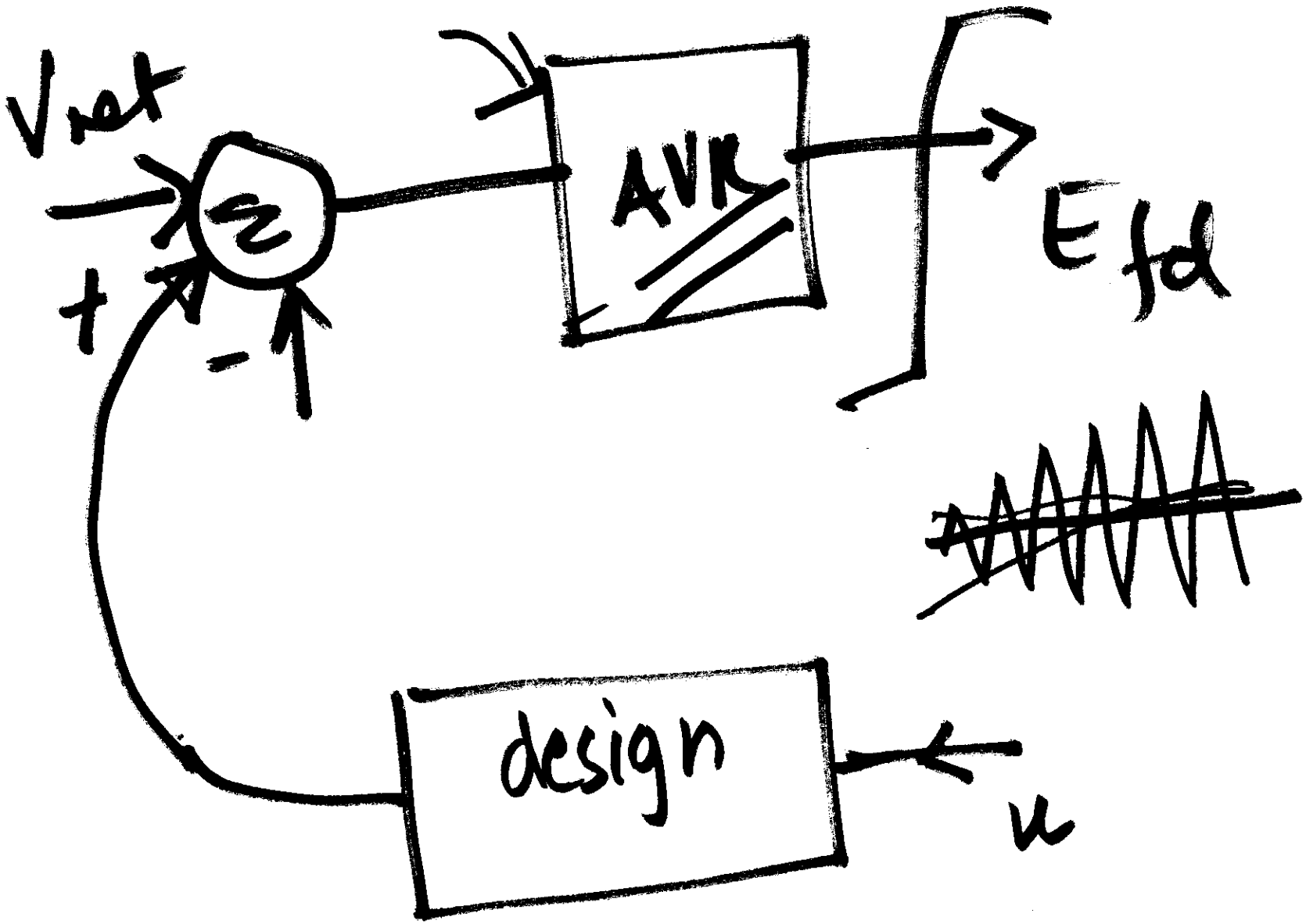
Definition

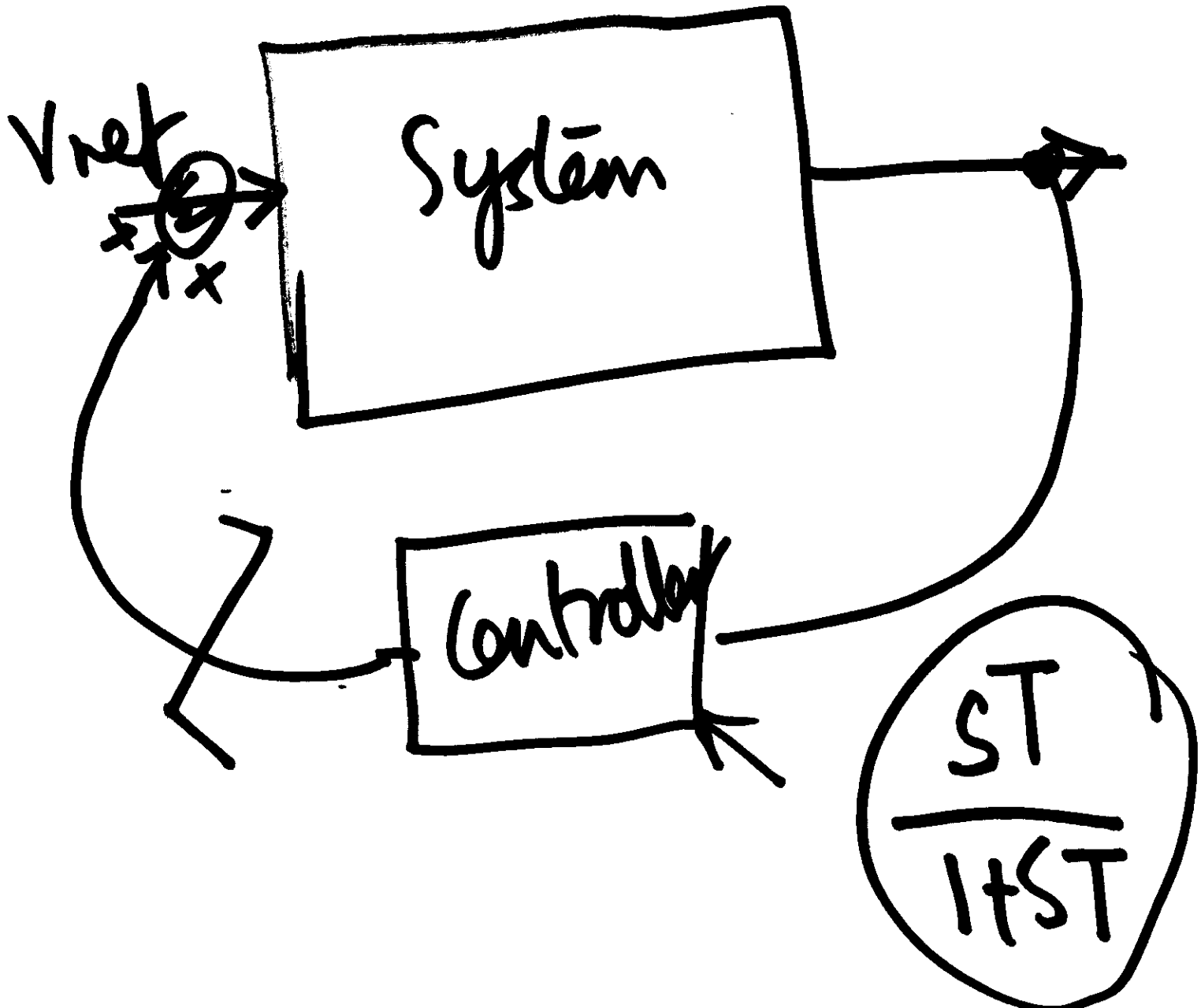
$$V = \sqrt{V_d^2 + V_q^2}$$

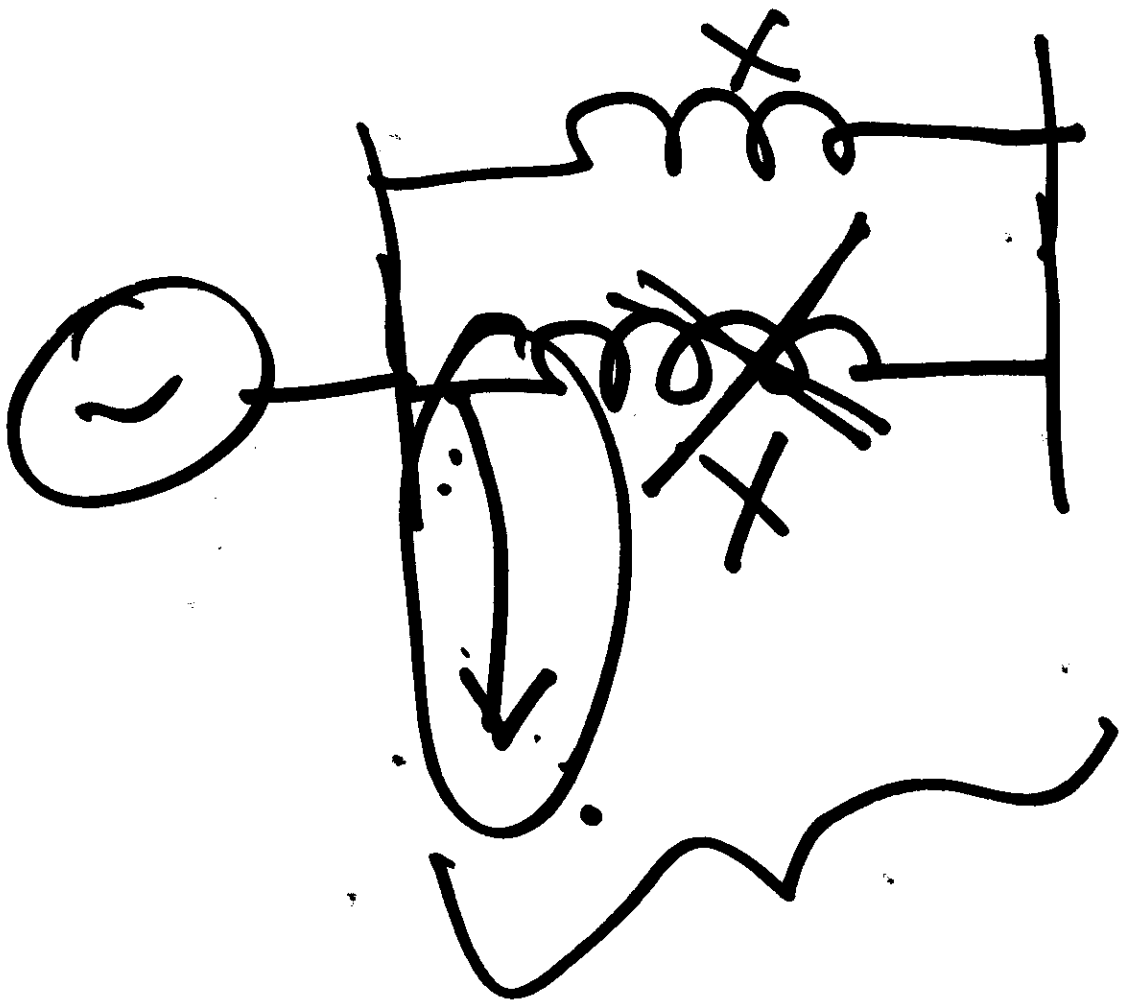
$$Q = V_d i_q - V_q i_d$$

$$\theta = \tan^{-1} V_d / V_q$$


Vref
+
-
Σ
KA
1+S TA
+
-
Efd
V
In case field is exceed


Vref
+
-
AVR
Efd
design
u


Vref
System
Controller
ST
1+ST



$$P/P_0 = \left(1 + K_{pv}\frac{\Delta V}{V_0}\right)\left(1 + K_{pf}\frac{\Delta f}{f_0}\right)$$

$P = P_0$ when $\underline{\Delta V, \Delta f}$

V_0, f_0

$$Q/Q_0 = \left(1 + K_{qv}\frac{\Delta V}{V_0}\right)\left(1 + K_{qf}\frac{\Delta f}{f_0}\right)$$

Air-conditioner (window)

→ 0.82,

$K_{pv} = 0.47$

$K_{qv} = 2.5$

$K_{pf} = 0.5$

$K_{qf} = -2.8$

Water Heater

$K_{pv} = 2.0$

$K_{pf} = 0$

$K_{af} = K_{av} = 0$

pf → 1

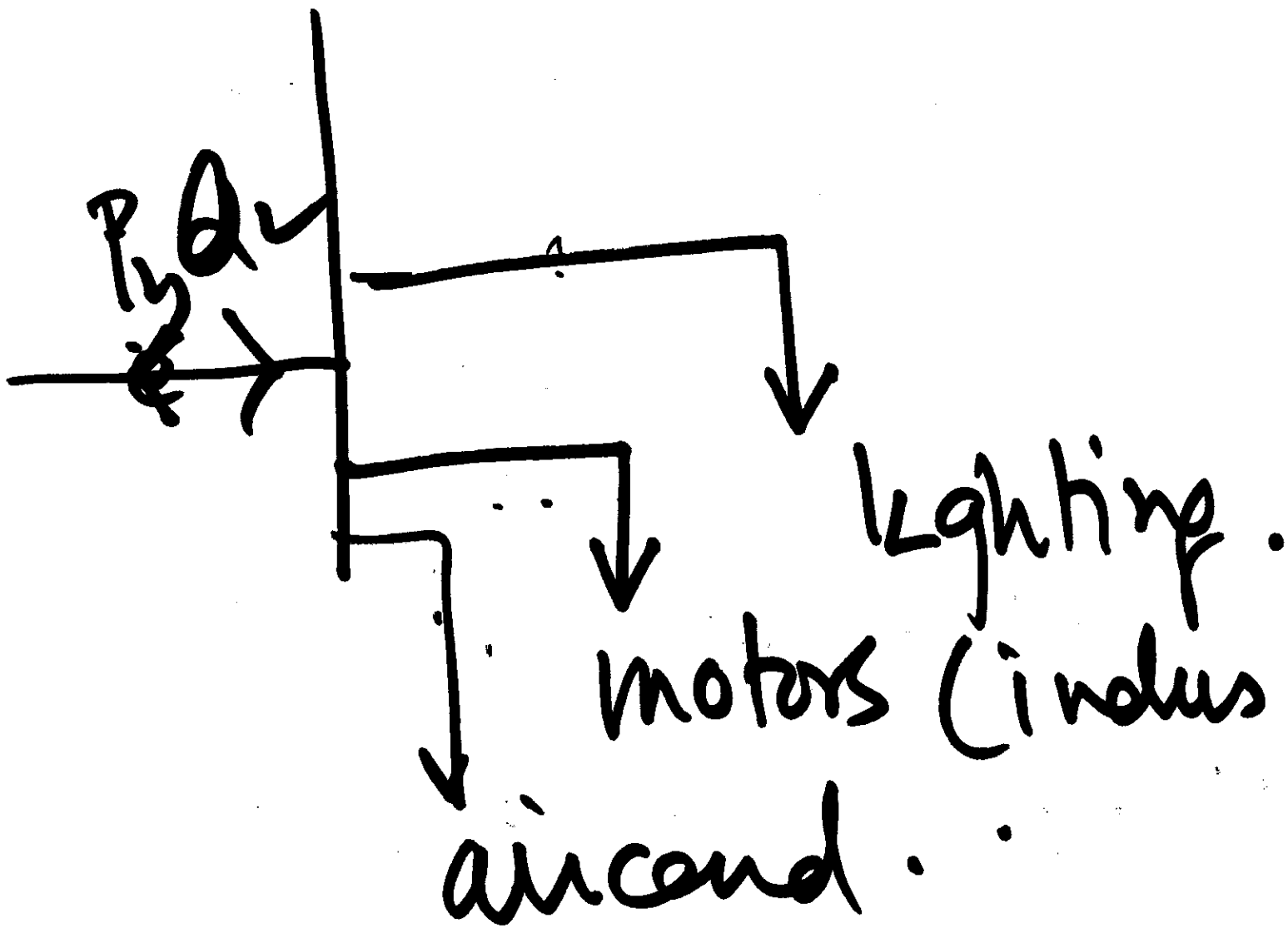
Kundur

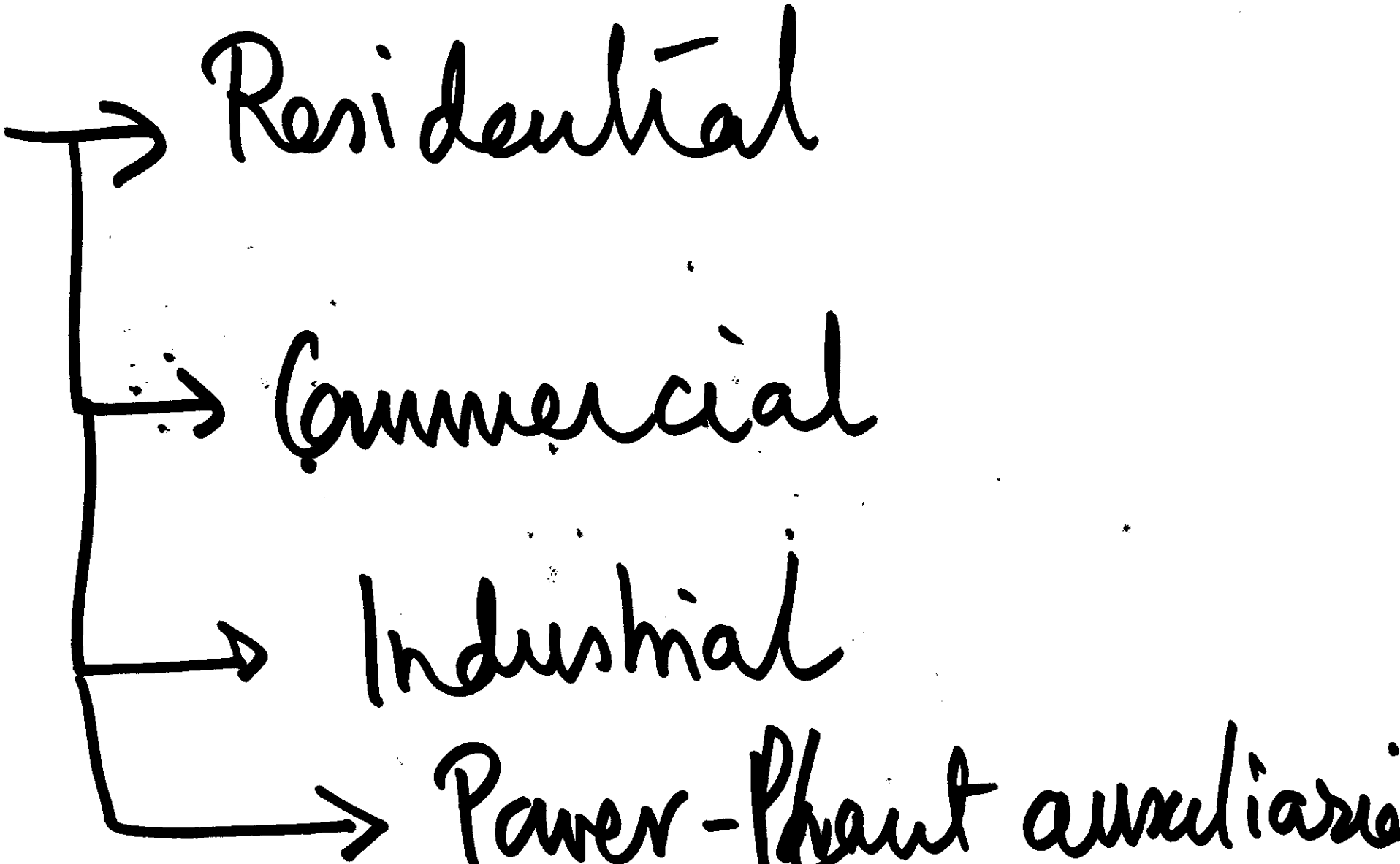
Industrial model

0.88 , $k_{pv} = 0.07$,

$k_{pf} = 2.5$ $k_{qv} = 0.15$

$k_{qf} = 1.2$.


P, Q
lighting.
motors (induc
aircond.


Residential
Commercial
Industrial
Power-Plant auxiliaries