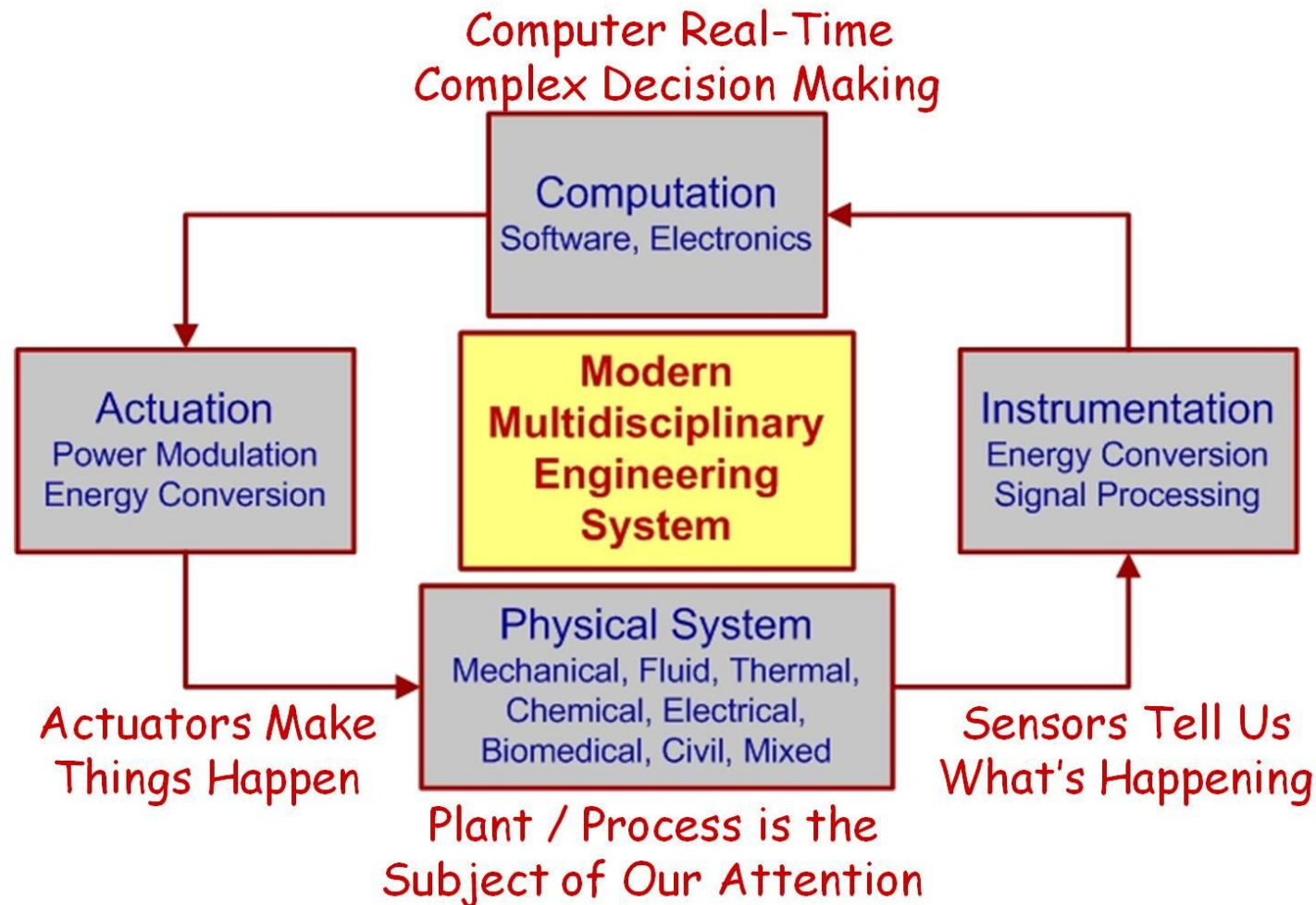
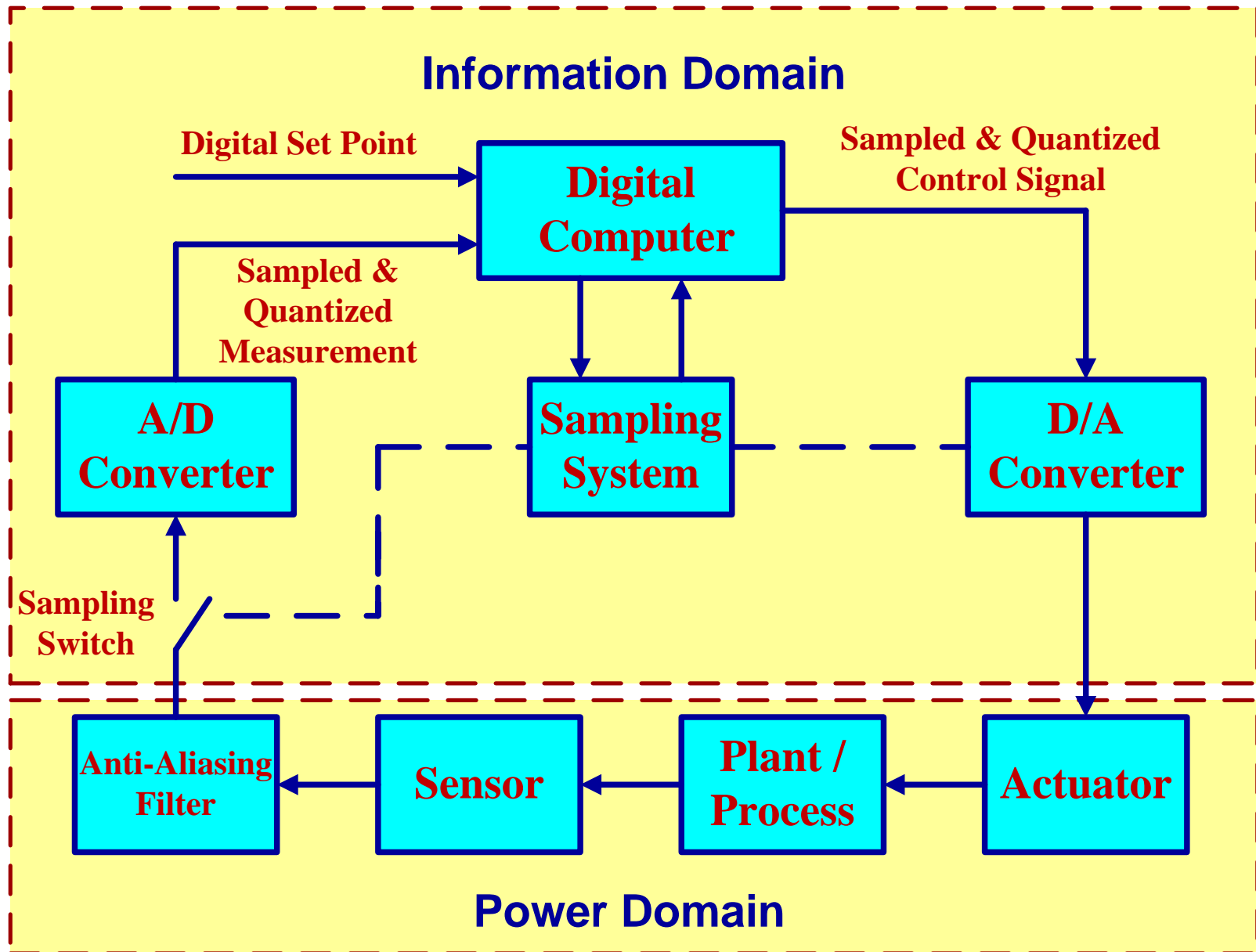
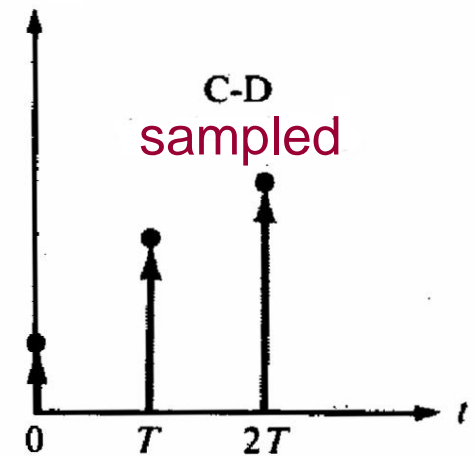
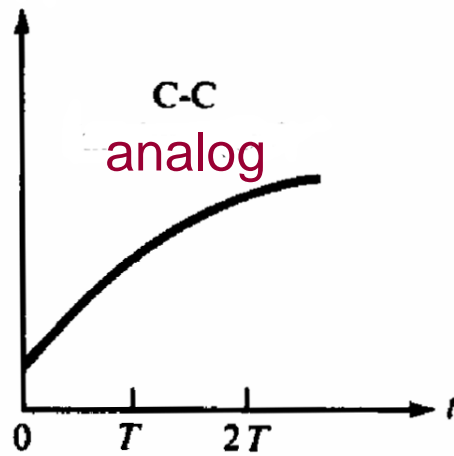


Electromechanical Engineering Systems

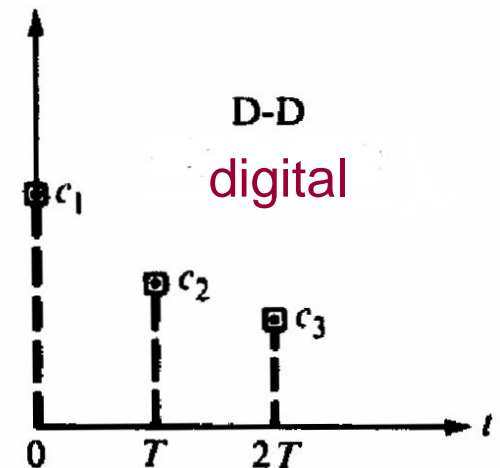
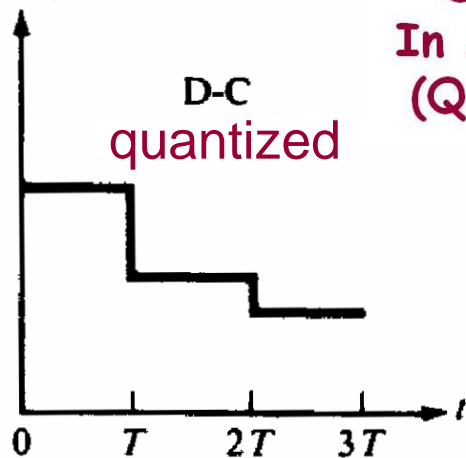




Computer-Controlled System Signals

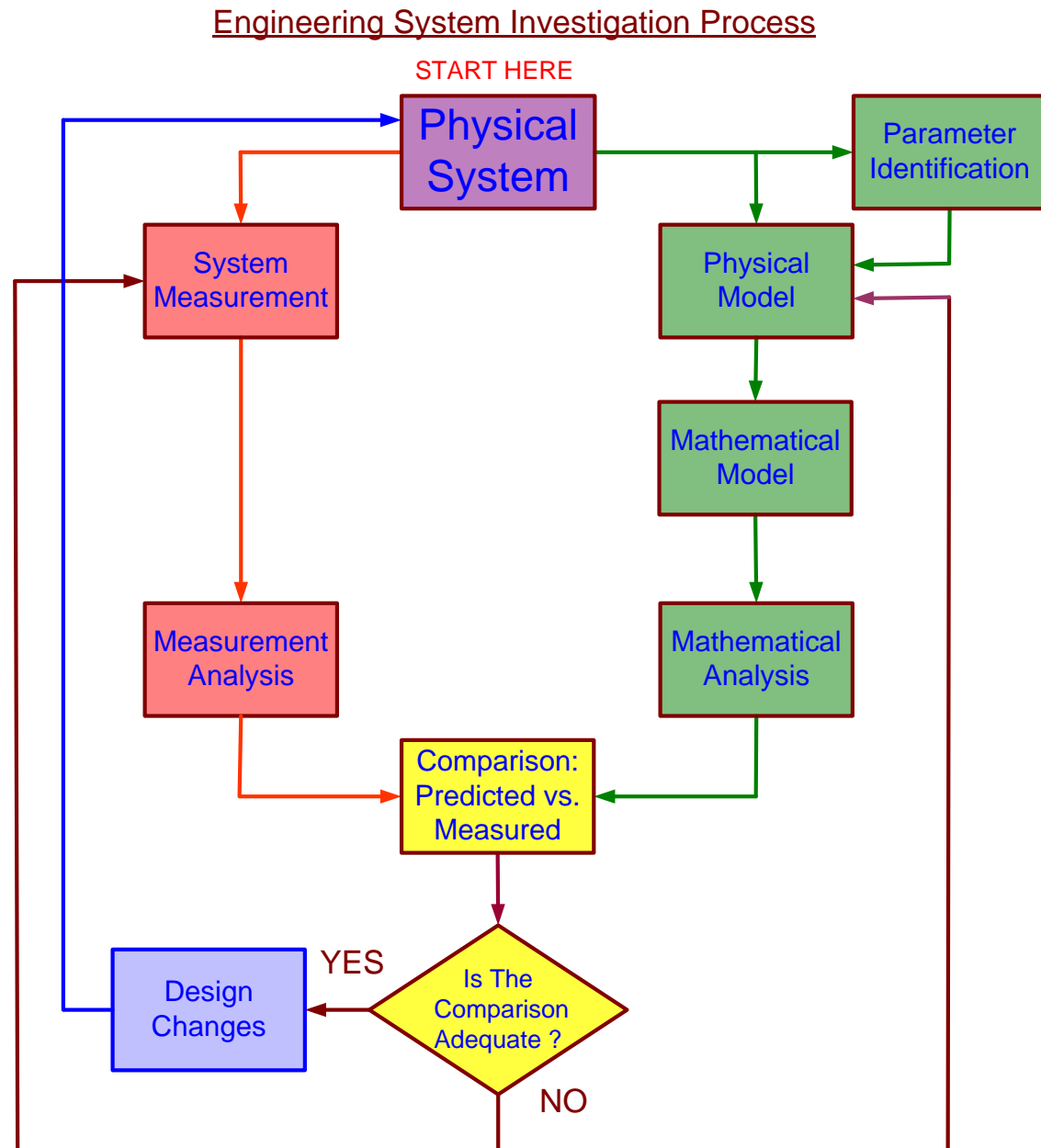


	Continuous In Time	Discrete In Time (Sampled)
Continuous In Amplitude	C-C	C-D
Discrete In Amplitude (Quantized)	D-C	D-D



Engineering System Investigation Process

The
cornerstone
of
modern
engineering
practice!



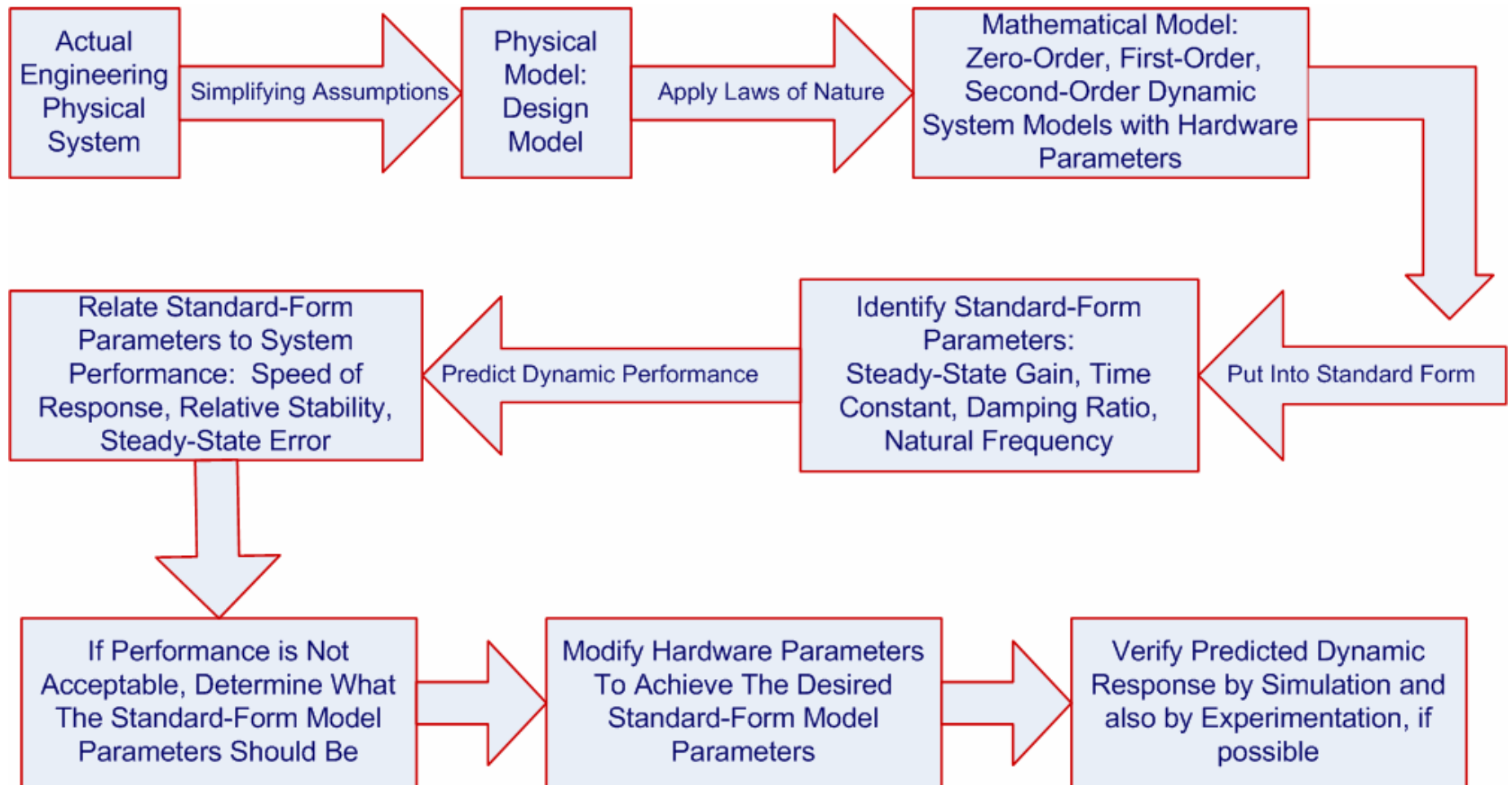
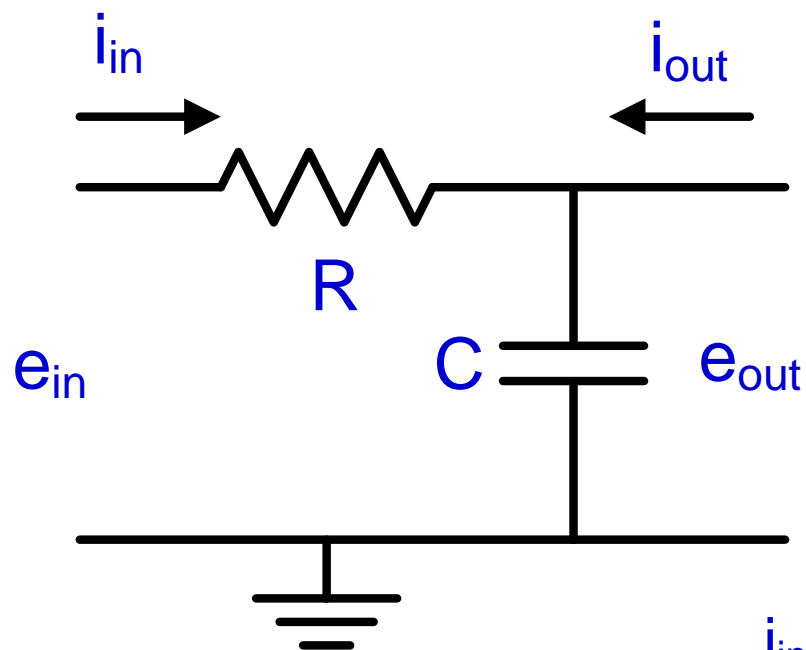
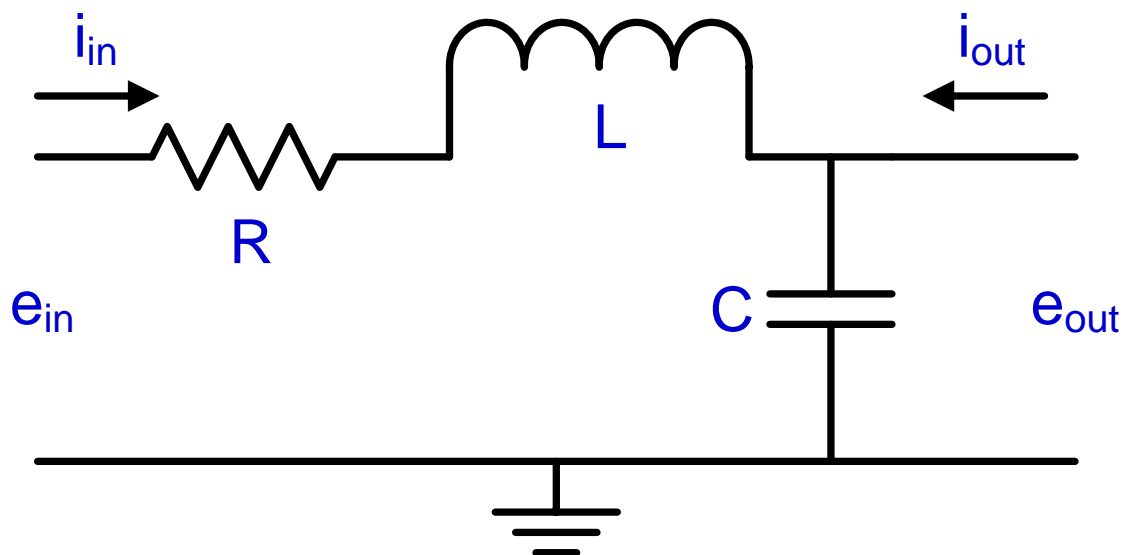


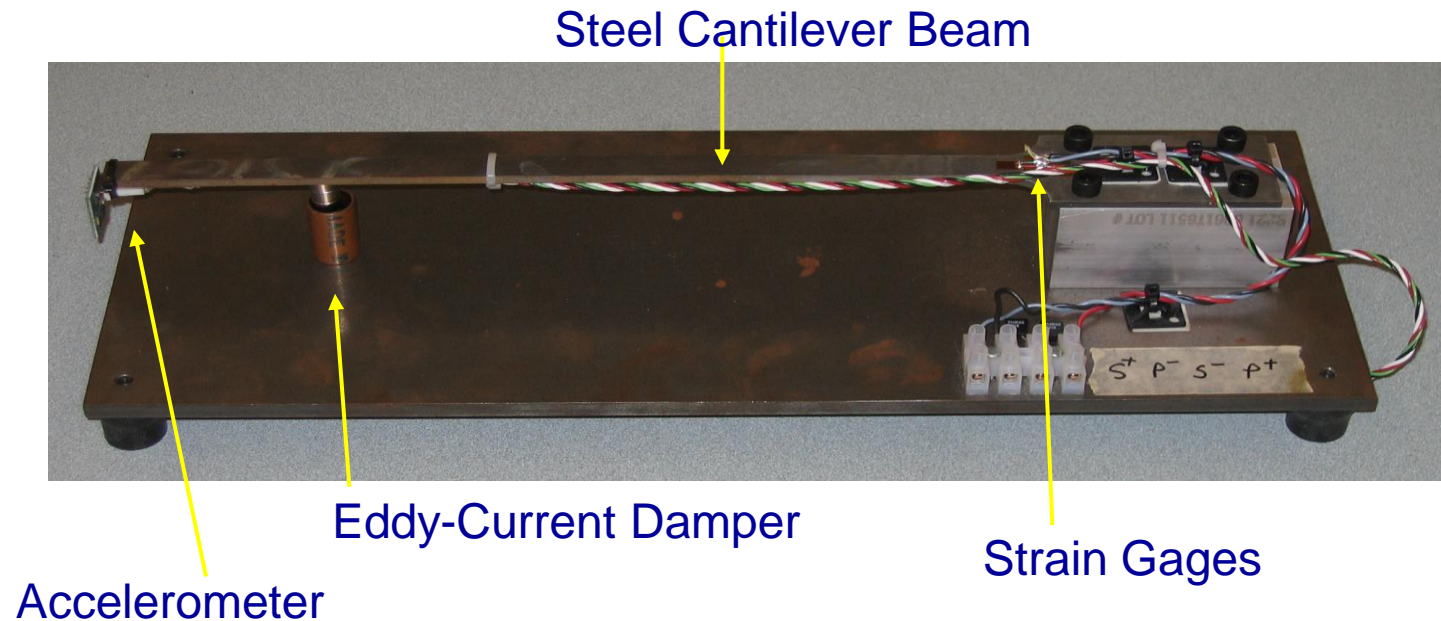
Diagram Showing How Physical Model Hardware Parameters Are Related to Physical Model Dynamic System Performance



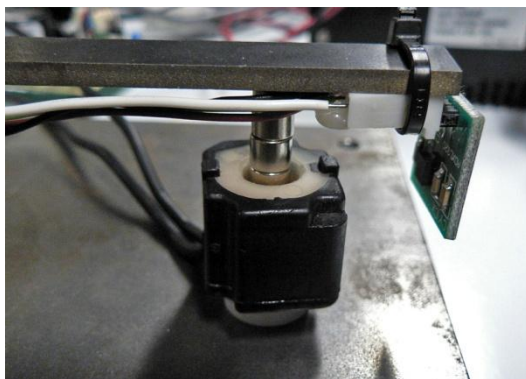
RC Circuit
Electrical System

LRC Circuit
Electrical System





Cantilever Beam Mechanical System

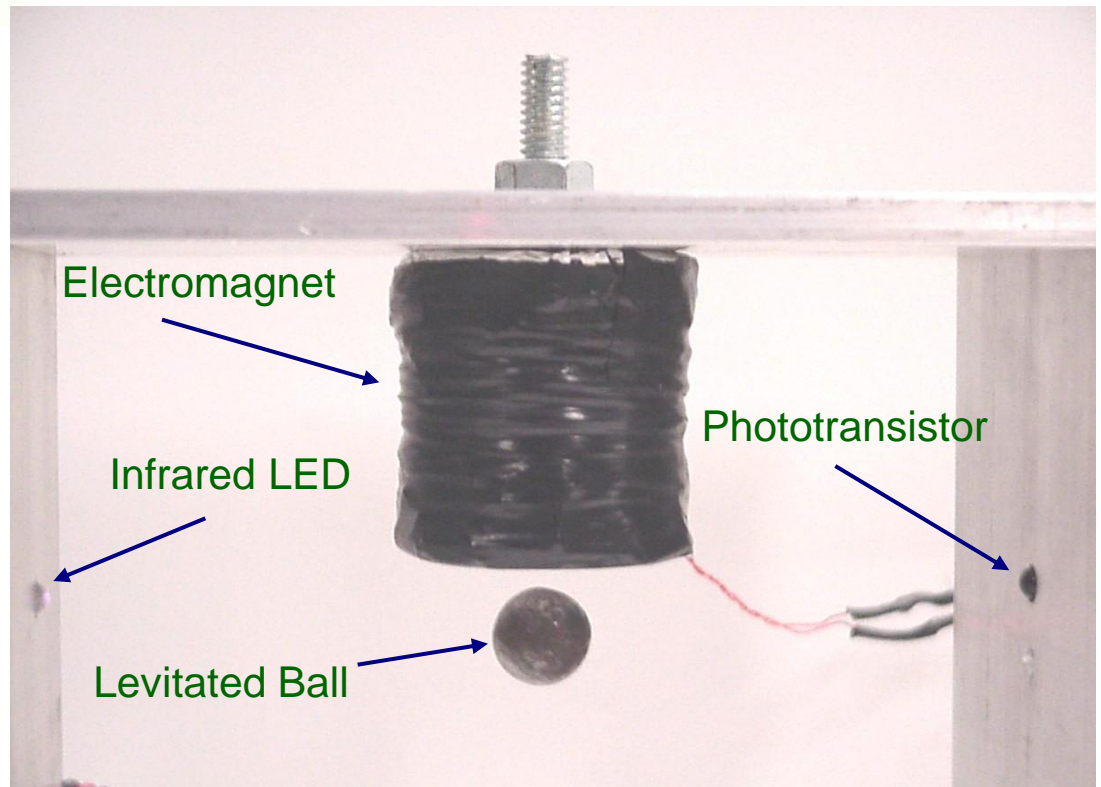


Solenoid
for
Sensing and Actuation

Brushed DC Motor with Optical Encoder

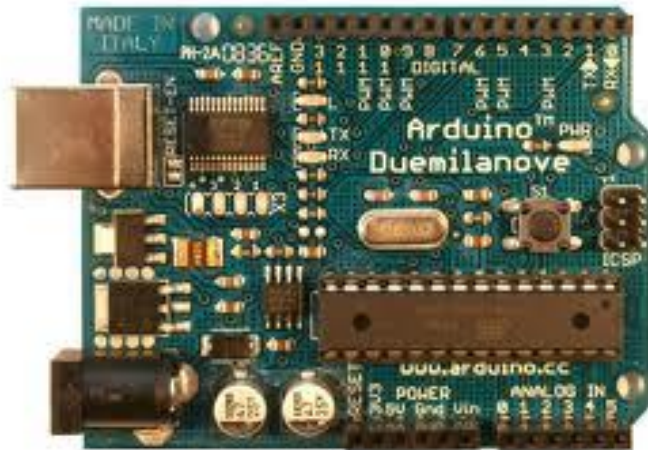


Magnetic Levitation System





Measurement and Real-Time Control



Industry Applications



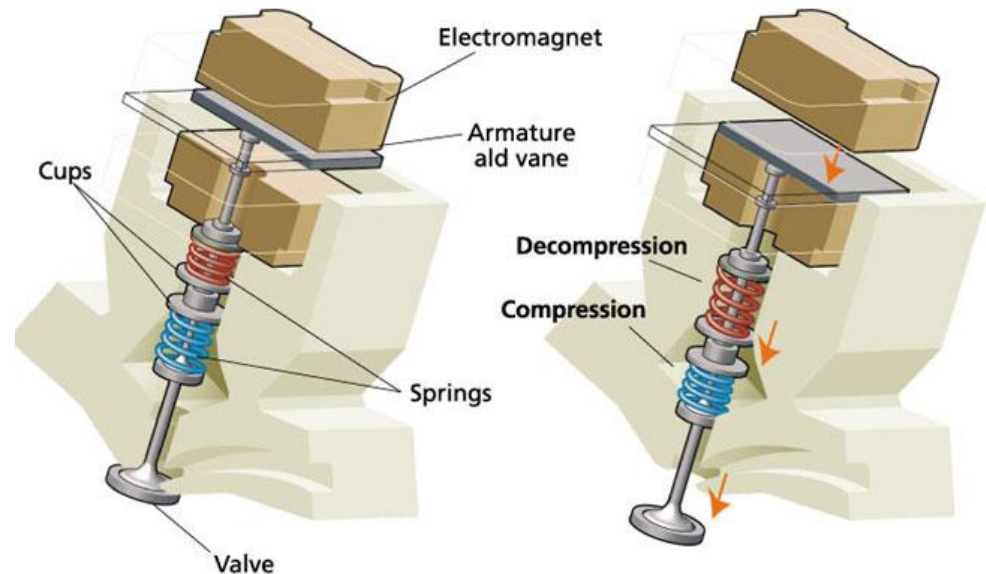
Computer Hard-Drive
Read-Write Head

POWERTRAIN EFFICIENCY

Valeo replaces camshaft with smart valve actuation (SVA)

When the upper electromagnet is activated, the vane is held upward. The valve is in the closed position.

When the upper electromagnet's magnetic field is disrupted, the vane is pulled downward by springs. Actuation of the lower electromagnet maintains the valve in the open position.



CHARACTERISTICS

- 20% reduction of fuel consumption
- 20% reduction of pollutant emissions
- 20% increase in low-end engine torque

- Optimization of air-fuel mixture and motion
- Each engine valve operates independently from the others and independently from the piston position

Two-Degree-of-Freedom Cable-Driven H-Bot

