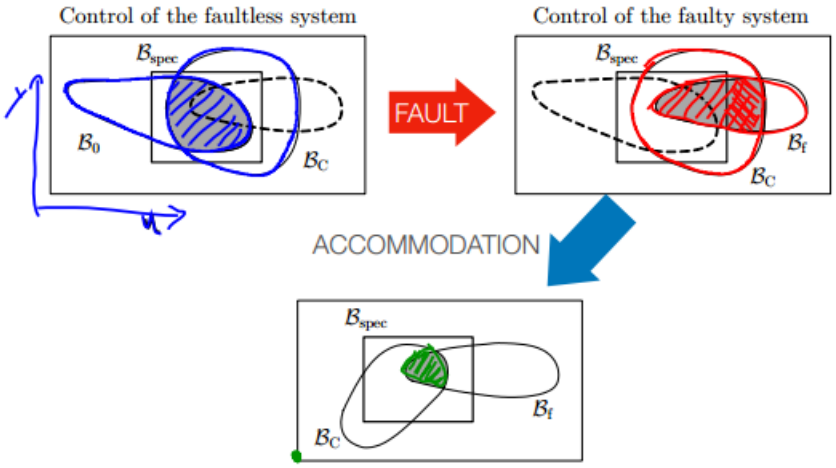
06_01_Fault_Tolerant_Control

1. Overview of FTC



Goal of FTC

Assumption

- we have a **closed loop** control system
- healthy closed loop control system is fulfilling some control specifications

Goals

- faulty closed loop control system is **fulfilling** another set of control specifications
- the set is still **acceptable**

Classification of FTC

There are mainly two trends of the FTC methods:

- **Active Fault Tolerant Control**
    - quickly **diagnose** the fault and
    - **change the control law** and/or the set of actuators and sensors such that either
        - **original** specifications are still fulfilled (**complete fault tolerance**)
        - a **reduced** or different set of specifications are fulfilled (**graceful degradation**)

        - specifications are not fulfilled, but **safe conditions** are guaranteed (**fail safe**)

- **Passive Fault Tolerant Control**
    - d**o not** need to make a **diagnosis** and **change** the control law
        - **adaptive control**: can track slowly developing faults, but not abrupt and or complete loss of functionalities
        - **robust control**: designed to tolerate changes, performances are never optimal