

Linear active disturbance-rejection control (LADRC) is investigated in this paper. First, it is shown that LADRC structure can be changed to a two-degree-of-freedom (TDF) internal model control (IMC) structure, where the nominal model for the IMC design is simply a multiple integral plant, so analysis of LADRC can be done via the IMC framework. Then it is shown that the widely adopted bandwidth-tuning method for LADRC is equivalent to tuning the two time constants of the setpoint filter and the disturbance-rejection filter in IMC. Finally, to improve the control performance of an LADRC, a general method is proposed to incorporate extra dynamics of the controlled plant in LADRC.