Operational Amplifier Compensation
(continued)
Approximation Uncompensated (including loading of compensating network)

Unloaded open-loop transfer function for compensation that includes a zero.
Compensating network

Viewgraph 13.2

Model for second stage of a two-stage amplifier.

Compensating network

Viewgraph 13.3

Circuit used to evaluate slow-rolloff compensation.
Network used to approximate an admittance proportional to $\sqrt{s}$

Comparison of approximate open-loop transfer functions for three types of compensation.
Demonstration Photograph
13.1 Slow-roll-off compensation demonstration

Demonstration Photograph
13.2 Slow-roll-off network
Our discussion of minor-loop compensation tailored to specific applications is continued. We find that if a zero is added to the open- (major-) loop transmission at an appropriate frequency, acceptable stability can be maintained when an additional pole (for example, from capacitive loading) occurs. This type of compensation requires specific information concerning the location of the additional pole.

Conversely, compensation that rolls off more slowly than $1/s$ is advantageous when it is expected that the additional pole will be located over a range of frequencies.

Reading

Textbook: Sections 13.3.4 and 13.3.5.

Problems

Problem 13.1 (P13.10)

Problem 13.2 (P13.11)