5.5 Feedback Circuit

The function of the feedback circuit is to return a fraction of the output voltage to the input of the amplifier feedback circuit of negative voltage feedback amplifier. It is essentially a potential divider consisting of resistances R1 and R2. The output voltage of the amplifier is fed to this potential divider which gives the feedback voltage to the input.

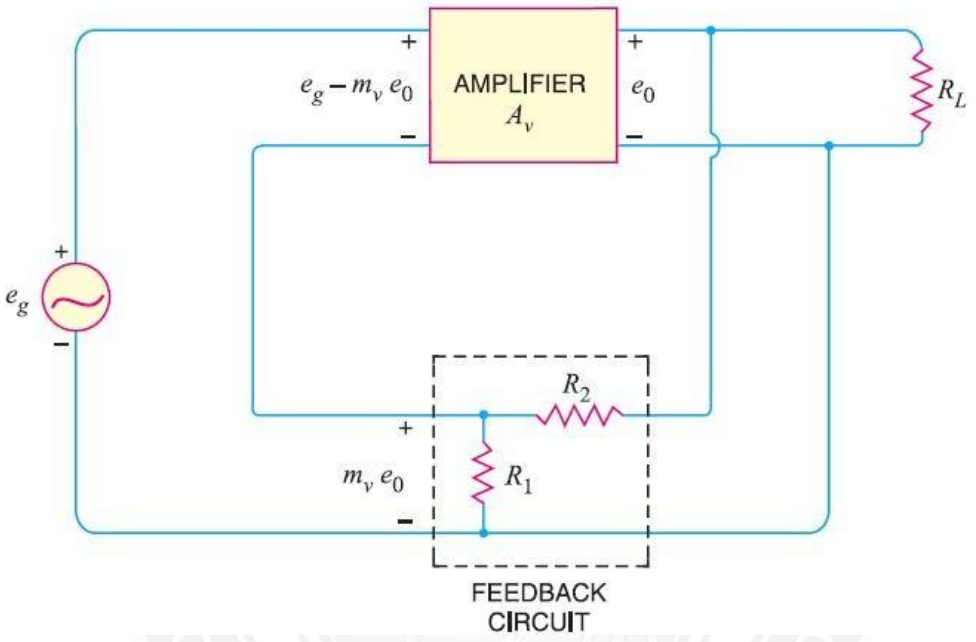

Figure: 5.5.1 Feedback Circuit

[Source: "Electronic devices and circuits" by "Balbir Kumar, Shail.B.Jain, and Page: 162]

Principles of Negative Current Feedback

In this method, a fraction of output current is feedback to the input of the amplifier. In other words, the feedback current (If) is proportional to the output current (I out) of the amplifier. Fig. 5.5.2 shows the principles of negative current feedback. This circuit is called current-shunt feedback circuit. A feedback resistor Rf is connected between input and output of the amplifier. This amplifier has a current gain of Ai without feedback. It means that a current I1 at the input terminals of the amplifier will appear as Ai I1 in the output circuit i.e., I out = Ai I1.

Now a fraction mi of this output current is feedback to the input through Rf. The fact that arrowhead shows the feed current being fed forward is because it is negative feedback.

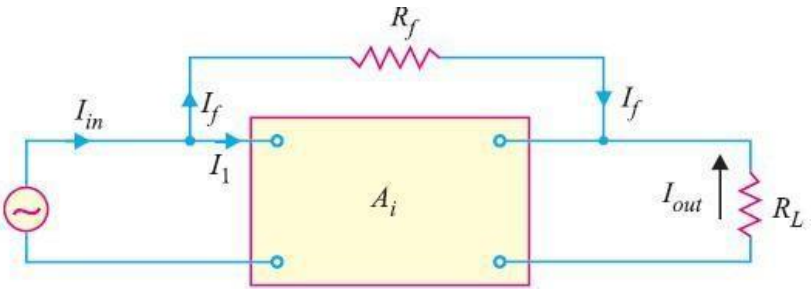

Figure: 5.5.2 Negative Current Feedback

[Source: "Electronic devices and circuits" by "Balbir Kumar, Shail.B.Jain, and Page: 162]

The following points may be noted carefully:

(i) The current gain of the amplifier without feedback is Ai. However, when negative current feedback is applied, the current gain is reduced by a factor (1 + mi Ai).

(ii) The feedback fraction (or current attenuation) mi has a value between 0 and 1.

(iii) The negative current feedback does not affect the voltage gain of the amplifier.