from: Kenneth S. Kundert "The Designer's Guide to SPICE & SPECTRE"

3.4.4 Non-Quiescent Operating Points

While it is most common to perform a small-signal analysis at a DC or quiescent operating point, in some cases it is enlightening to perform a small-signal analysis about a non-quiescent operating point. The frequency response of a nonlinear circuit can change dramatically as a function of operating point. Consider the μA741 opamp in unity gain configuration. Its frequency response as computed about the DC operating point is shown in the bottom of Figure 3.37. Also shown is the frequency response computed while the opamp is undergoing slew-rate limiting. It is interesting to note that the direction that the output is slewing has a dramatic affect on the loop gain.

To make this measurement, the opamp was driven with a unit step, the response to which is shown in the top of Figure 3.37. A transient analysis is performed to 10 μs, which is right in the middle of the slew-rate limiting region. The transient analysis is immediately followed by an AC analysis. To get the AC analysis in Spectre (SPICE does not provide this capability) to use the final point of the transient analysis as the operating point, the `prevoppoint` parameter of the AC analysis is set to `yes`. This prevents the AC analysis from recomputing the DC operating point and causes it to linearize the circuit about the last point computed by the transient analysis.