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RELEASE NOTES

Spice3f is the six major release of Spice3. This release incorporates new features not available in Spice 3c or 3d, as well as several performance improvements. All of the features described here are believed to be fully functional. The development of SPICE and its algorithms is ongoing at Berkeley, and therefore not all of the intended capabilities of the program have been implemented in full yet.

Bugs in 3f2 fixed in 3f3:

```
Ascii (printer) plots in spice3f2 did not print bode plots
vs log of the frequency by default, as in spice2.
You had to explicity request the x-axis to be log; either
"plot vdb(2) xlog" (best) or "plot vdb(2) vs log10(frequency)" will do.
Now simply "plot vdb(2)" will work.

The on-line documentation has been brought up to date by converting this
manual into a format readable on-line.

Significant problems with AC sensitivities in 3f2 only have been fixed.

Multiple analyses and plots in spice2 emulation mode under 3f2 and earlier
generated misleading error messages.
This no longer happens in 3f3.
```

New features and bug fixes incorporated in Spice3f (the current release of Spice3):

```
Sensitivity analysis.
Added a parameter for fitting JFET models (parameter "B").
Fixed a discontinuity problem in MOS level 3
      (related to the "kappa" parameter).
Working "alter" command.
Improved "show" and "showmod" commands for operating
      point summary tables (like Spice2).
Working "trace" command.
Interactive "set" variable values now the same as ".options" settings.
Improved plotting, including implicitly transforming data for smith plots.
Added the function "deriv( )" (derivative) to the front-end.
Corrected an error affecting the specified initial conditions for
      some circuits.
Small signal behaviour of non-linear dependant sources fixed.
Miscellaneous bug fixes in the front end.
```

New features and bug fixes incorporated in Spice3e (the *previous* release of Spice3):

```
Lossy Transmission Lines.
Proper calculation of sheet resistance in the MOS models.
A new command ("where") to aid in debugging troublesome circuits.
Smith-chart plots working (see the "plot" command).
Arbitrary sources in subcircuits handled correctly.
Arbitrary source reciprocal calculations and DC biasing fixed.
Minor bug-fixes to the Pole-Zero analysis.
Miscellaneous bug fixes in the front end.
```

Some common problems remaining in Spice3f (note that this list is not complete):

```
Models defined within subcircuits are not always handled correctly.
If you have trouble, move the model definition outside of ".subckt"
and ".ends" lines.
```

```
Batch run data is not compacted if a "rawspice" data file is generated,
resulting in excessively large output files for some difficult inputs.

Sufficient detail is sometimes not preserved in transient analysis.
Providing a small value for the "TMAX" parameter (the fourth argument)
in the transient run command will solve this problem.

Convergence problems can sometimes be worked around by relaxing the
transient "TMAX" parameter.

The substrate node of the bipolar transistor (BJT) is modelled
incorrectly (this may actually be due to inherant numerical
problems with the model).  Do not use the substrate node; use
a semiconductor capacitor to model substrate effects.

Charge is not conserved in MOS devices based on the Meyer model.

Transient simulation of strictly resistive circuits (typical for
first runs or tests) allow a time step that is too large (e.g. a
sinusoidal source driving a resistor).  There is no integration error
to restrict the time step.  Use the "TMAX" parameter or include reactive
elements.

Deep nesting of subcircuits may exceed internal static buffers.

The PZ analysis can not be interrupted;  the sensitivity analysis
can not be continued (the interactive "resume" command) once interrupted.

There are many other small bugs, particularly in the front end.
```

Bug reporting:

Please send bug reports or suggested enhancements to Spice3 via electronic mail to:

```
spice@Berkeley.EDU  (Internet)
ucbvax!spice  (UUCP-net)
```

or by physical mail to "Spice3 Bug Report" at:

```
EECS/ERL Industrial Support Office
205 Cory Hall
U.C. Berkeley
Berkeley, CA   94720
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Information on ordering Spice3 or other software distributed through the EECS/ERL Industrial Support Office should be directed to the above physical mail address or to "ilpsoftware@berkeley.edu" via electronic mail.

Include the version of Spice used, the system type and operating system version, the smallest input file demonstrating the problem, and the resulting (incorrect) output.