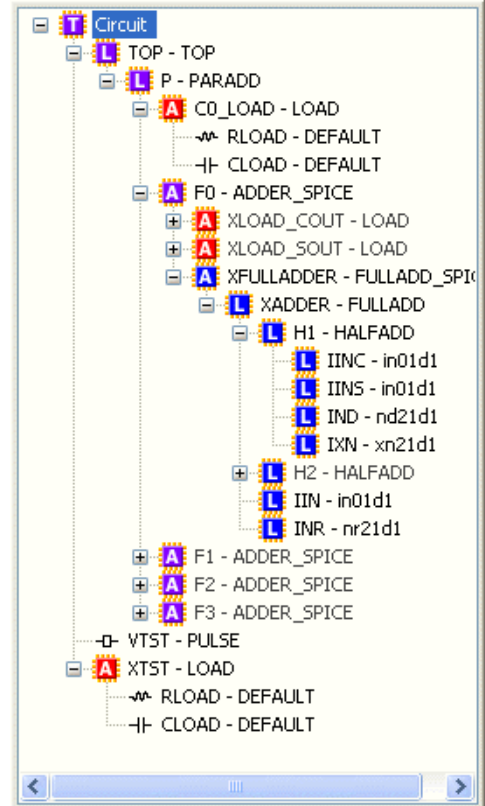


Performing true mixed-signal simulations, as needed by a growing proportion of SoCs, requires bringing together analog blocks, from a schematic based analog design flow on a purely analog simulator, and logic blocks, from a batch based HDL design flow on a purely logic simulator. As the mixed-signal simulator for SoCs, SMASH provides both the analog and logic capabilities to directly simulate with the original models, while adding the circuit and testbench setup capabilities needed to perform complete mixed-signal simulations.

**SMASH 5.11 delivers enhanced ease of simulation setup and analysis while simplifying reuse of analog blocks with HDL in mixed-signal simulations!**

### KEY ENHANCEMENTS

- ✓ Enhanced ease of setup with simulator control file (.pat, .cir, .sp) for analog and logic designers
- ✓ Streamlined graphic user interface with reworked menu bar and enriched tool bars
- ✓ Extended formula editor dialog for creation of calculated traces
- ✓ Integrated Power-Up analysis for transient ramp-up of circuit power supplies
- ✓ Simplified and accelerated automatic operating-point searching for painfully converging circuits
- ✓ Bias point saving during transient analysis at designer specified times
- ✓ Extended noise analysis to Verilog-A models
- ✓ Support for encrypted SPICE libraries including .PROTECT related directives
- ✓ Integration of BSIM4 v6/v6.1 and PSP HSPICE extensions for increased compliance with foundry model parameter files
- ✓ Optimized on the fly SDF annotation to reduce memory consumption during circuit elaboration



### DESCRIPTION OF THE EASE OF USE

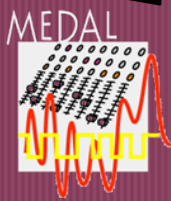
The new tree display of the hierarchy above illustrates the granularity of mixing analog and logic at any level in the circuit hierarchy.

From an analog designer's point of view, ease of use requires direct use of fab model parameter sets, loading of SPICE netlists whatever the flavor (Hspice, Eldo, Pspice...), fast and automatic operating-point convergence and probing of nets for waveform tracing. To this, SMASH adds unique circuit debugging features, such as dynamic ERC, dispersion sensitivity analysis... making it the best magnifier for bug-tracking.

From a logic designer's point of view, ease of use requires straightforward compilation of HDL sources (possibly by converting compilation scripts from other solutions), simple setup of source code debugging for step by step simulation, probing of signals for efficient circuit state investigation, and code coverage reporting to ensure an exhaustive test coverage.



**SMASH is available identically under Linux, Solaris and Windows.**

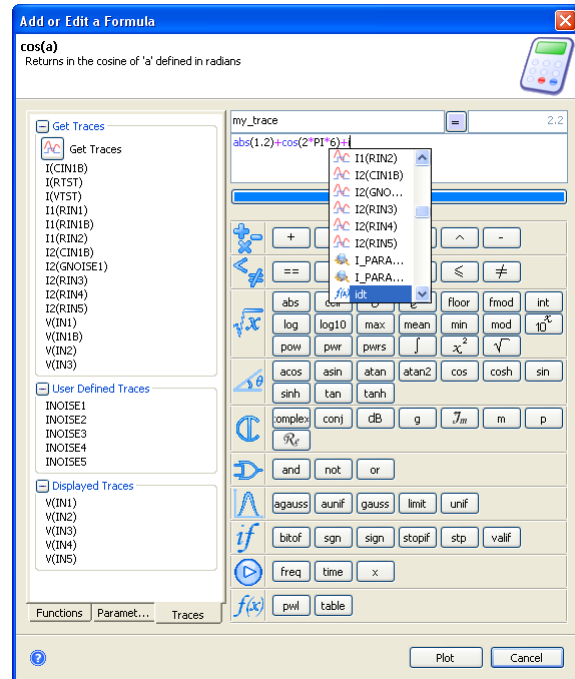


An important part of the analysis of simulation results consists in designers performing mathematical operations on simulation waveforms, and tracing the corresponding waveform to visualize design characteristics and detect design weaknesses. The integrated waveform viewer provides the means to edit and calculate mathematical expressions, or formulas, based on nets and parameters available in the design as well as existing waveforms.

**SMASH provides an advanced waveform expression editor for calculating and tracing formula waveforms in the integrated waveform viewer.**

## KEY FEATURES

- ✓ Detailed analysis of simulation results
- ✓ Maskable calculator for quick overview of available operators and mathematical functions
- ✓ Direct tracing of calculated waveforms
- ✓ Direct evaluation of entered expressions
- ✓ Extensive set of operators and mathematical functions grouped in categories
- ✓ User defined functions available
- ✓ Straightforward insertion of existing traces and parameters
- ✓ Waveform expressions as a function of time (transient) or frequency (small-signal, noise)
- ✓ Syntax highlighting and code completion for efficient formula edition
- ✓ Built-in on-line interactive help



## DESCRIPTION OF THE ENHANCEMENTS

The formula editor dialog above is enabled for creation of formula waveforms. As users become familiar with its potential, future releases shall augment the means to edit measure expressions (.MEASURE), parameter expressions (.PARAM), and dialog field expressions for entry of values throughout the user interface.

Using the waveform expression editor eliminates any need to edit calculated traces manually in the simulator control file. The enhanced expression builder and calculator provides the analog designer with an intuitive formula creation interface providing a complete set of operators and mathematical functions (including user-defined functions).

Calculated waveforms can be easily composed with direct access to top level circuit parameters, displayed traces and the addition of nets & signals. Syntax coloring and word completion accelerate the entry of expressions while interactive information provides help for syntax and function descriptions.



**SMASH is available identically under Linux, Solaris and Windows.**