

Gnucap

What is it?

- Run on hardware too small to run Spice!
(originally)
- Beyond Spice – fast, mixed signal
- Updated architecture – C++, plugins
- Model compiler

Beyond Spice

- Mixed signal – implicit mixed mode
- “fast-spice”
- Large circuits
- Time step control

Mixed-mode

- “Implicit” mixed mode
- Introduced concept of a “connectmodule” (but not the name)
- Digital techniques for analog.

Digital techniques for analog

- Event queue – activity driven
- Partial solutions
- Low rank partial matrix solver
- Incremental update
- Queues – load, eval, accept
- Full spice accuracy

Time step control

- Cross events – separate smoothness and moving events
- Real events – once it is scheduled, it's known
- Getting started

Software architecture

- C++
- Plugins
- Library
-
- Program = main + library + plugins

Library

- Matrix solver
- Database
- I/O
- Expression evaluator

Plugins – why?

- Collaboration, modularity enforced
- Quality
- Dependencies
- Anyone can make a plugin

Plugins – how?

- C++ derived classes
- “Dispatcher”
- Wrappers

Plugins – what?

- Devices
- Commands, algorithms
- Source languages (spice, spectre, verilog)
- Measurements
- Outputs (working on it)

Plugins – wrappers

- Interface to foreign code
- Spice (s) --- 3e3, 3f5, Jspice, Ngspice (v??)
- Qucs???
- System-c????
- Python?

Model compiler

- Predates *AMS
- Need to update to Verilog-AMS
- Optimizing
- Could generate code for other targets
- Replace ADMS
- Eventually – full language?

Help wanted

- Plugins
- Wrappers
- Google summer-of-code