

# Re: Wanted: LM-709 (Spice model) National Op-Amp

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Mike:

Well if you will have a garbage-posting dishonest creep like me to your four-hour seminar I feel the least I can do is attend. I'll talk to Gary Sapia in the local sales office about the seminar. Thanks for the invite. Look for the guy in the back row wearing a Nixon mask.

There are actually other people in the world competent to evaluate well-written source code. I suspect several read this group. And it is a well-accepted fact that open-source projects always result in improved results. I am not an open-source nut however. I will defend to the death your right to maintain and sell proprietary code.

A half million lines of code. A half million lines of code. Wow. And accepted software productivity is between 5 and 10 lines of debugged implemented code per day. 200 work days in a year. So half a million line is what... 250 man-years of code. Wow. I knew Swanson overworked his people and there are all kinds of LT burnouts and walking-wounded here in the valley but I had no idea how bad it was over there. My software consultant buddies say that right around 600 or 700k lines of code any program becomes un-maintainable so you still have some room to grow if needed.

Lighten up Panama. And don't worry so much about protecting your software and all the arcanities inside it. No one here really cares about the indirect pointers to the linked lists and malloc call recursive gobbledy gook. We just care if it will give decent results on real-world circuits. Thanks to two posters here in the group, (analog and Helmut), I think we will soon know.

Mr. (Dr./Prof?) Thompson:

What do you use? I hope it is not some proprietary thing like Analog Devices' internal SPICE. I hope you will serve as

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judge jury and executioner in our little test. And remember everyone-- in my opinion we are mis-applying SPICE. The acronym stands for "Simulation Program with Integrated Circuit Emphasis" It is not SPBLE. Spible would be "Simulation Program with Board-Level Emphasis". This is why there seems to be such passions aroused when us board guys say we don't worship SPICE the way IC designers do. BTW, Dave Tamura in the CAD department at National rolled his eyes when I told him I said Process and Modeling departments cost 5 or 10 million dollars a year for a big semiconductor company. He hinted that tens times those numbers is not unheard of. He also said that his CAD department is also involved in making sure the models conform to reality.

Helmut:

I will take it upon myself to find the EDN article. Worse comes to worse I will call Williams, he should remember it. Then everybody can use it as a benchmark. I will also release one of my schematics to the public domain to see how all these packages do with it. I have to believe you guys when you say LTspice is really good and fast. Like my brother says: "An ounce of trial is worth a pound of opinion."

I just hope EDN didn't use an LM709 (;^o)-

And everybody: Watch the Tina-TI presentation on CMP's EE Times webseminar to see how that SPICE did not predict the real circuit results until they added caps to model board strays. Of course they used a milled board and that is a whole 'nuther thread.

It is archived and was shot on Sept 14th  
<http://cmpnetseminars.com/TSG/?K=On24&O=265>

And on a completely different subject:  
Who wrote the Masstech layout program that Orcad bought and incorporated into Orcad?

Paul

Mike Engelhardt wrote:

Paul,

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I do agree if there is no sanctioning body like IEEE or W3C or anybody to validate the claim for an improved engine, one has to be more critical. How can one judge the advance of proprietary standards unless you guys start opening up your code so the community can see the difference in the source? Sorry if you feel I am posting garbage, I am trying to be positive.

Well, I'm not trying to be negative you do post garbage. You can't evaluate a simulator's performance by looking at the source code and you should know better. I don't know if you're deliberately dishonest or ignorant. LTspice is close to a half million lines of code. You have to compile it and test the program to see its performance. I'm guessing your comment is more dishonest than ignorant because it appears to be an empty challenge to release the source code of LTspice and trying to couple that challenge with a challenge of proof of LTspice's performance, presumably hoping one topic will drop with the other.

But it's not very hard to understand why LTspice runs faster and is more accurate than other/earlier SPICE engines. I occasionally give 4hr seminars that explain in some detail what one needs to do to make a better SPICE engine. People are surprised that I reveal all, but the trick is I tell what one needs to do, not how to go about writing that code. There is an arrangement with an officer of LTC that prevents loss of any of the planet's intellectual property in the event of my death so that how to implement this code is not lost when I die. Anyway, in the seminar, I demonstrate the fantastically improved accuracy of the core LTspice solvers and the corresponding improvements in simulation speed with live simulation runs. Anyway those with legitimate interest in LTspice can contact your local LTC office and request when/where the next seminars will be (please don't contact me, I have people smarter than me that schedule them). The seminars are worldwide.

--Mike