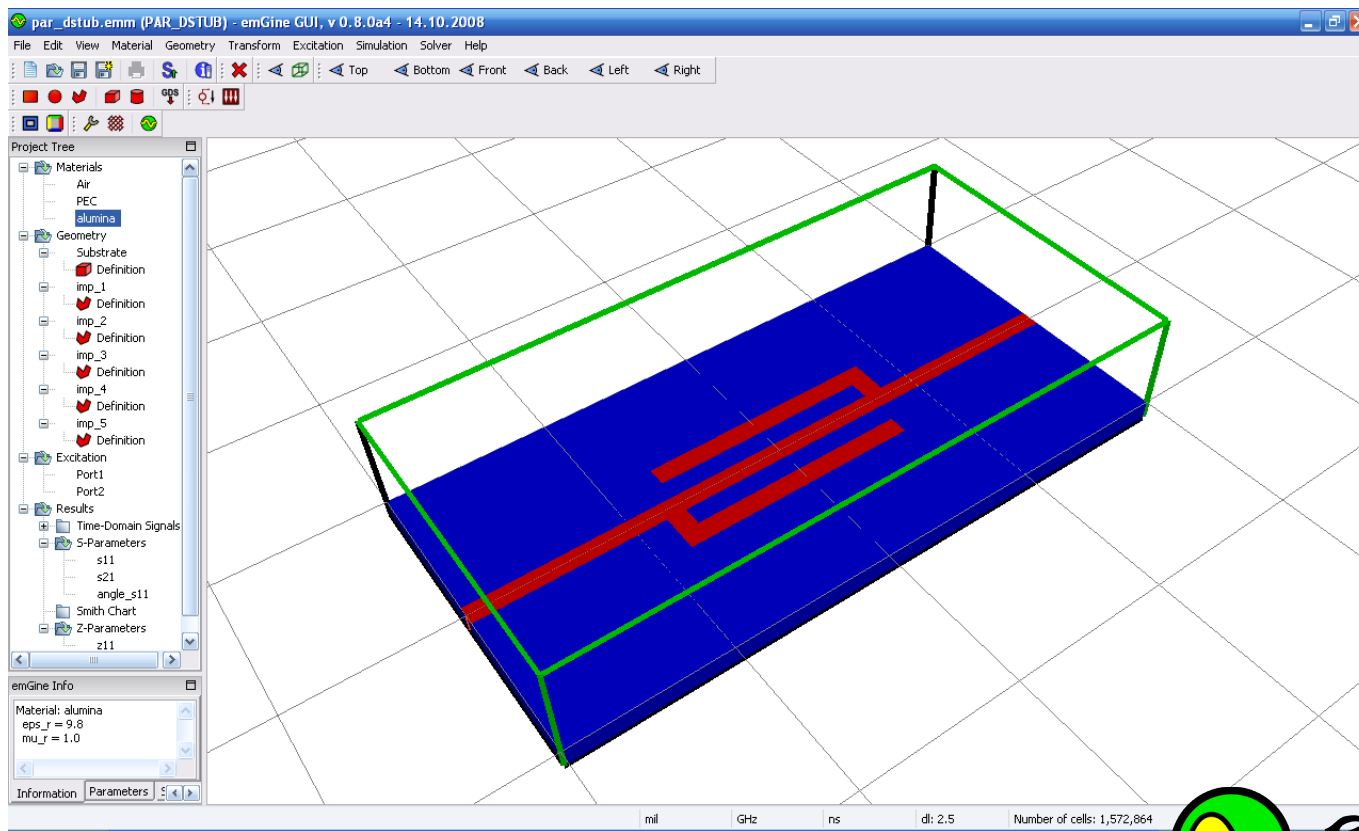


emGine Environment – Electromagnetic Simulator

- Time-domain full-wave 3-D electromagnetic simulator
- Based on the transmission line matrix (TLM) method
- Fast simulations, ultra fast version for free-space simulations
- Free version* for non-commercial purposes
- Open-Source graphical user interface emGine GUI
- Portable – Windows, Linux, Mac OS X
- Support for multicore processors using OpenMP
- Windows installer available at <http://www.petr-lorenz.com>

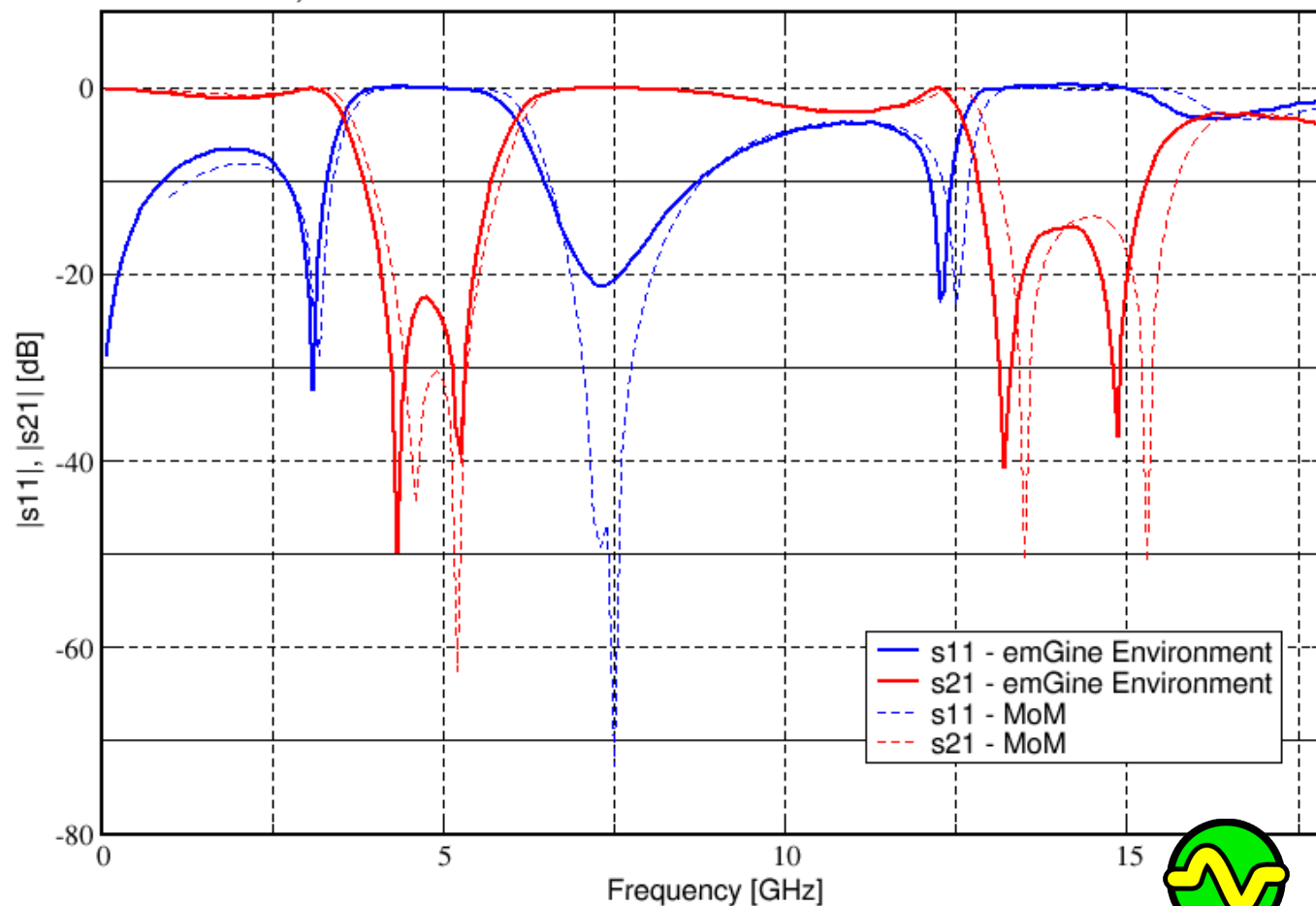
emGine Example 1: Microstrip Line with two Stubs

- Microstrip line with two stubs on alumina substrate*
- Substrate parameters: $\epsilon_{s_r} = 9.8$, $h = 20$ mil
- Results compared with Sonnet MoM simulator



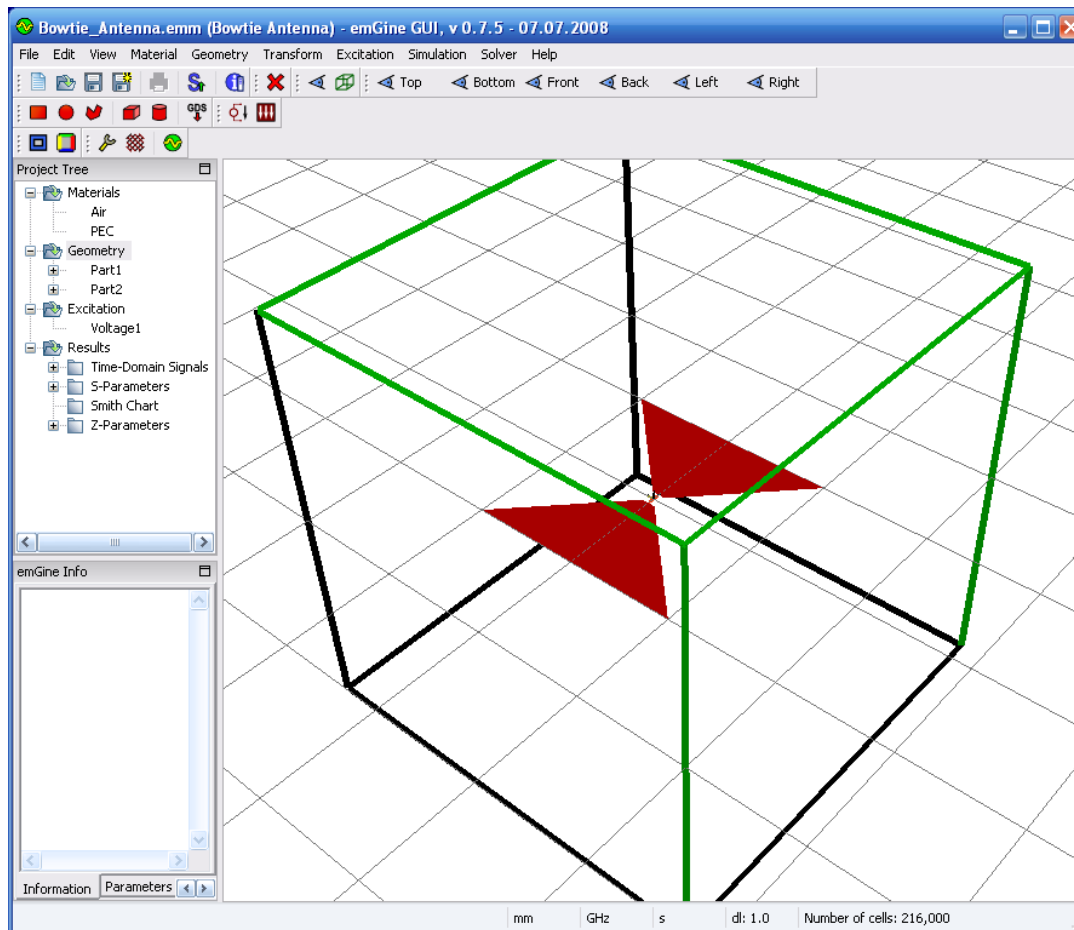
emGine Example 1: Comparison of S-parameters

- Number of TLM cells: 1,527,864; uniform $\Delta_l = 2.5$ mil
- Total simulation time ca 30 minutes (single core, uniform discretization)



emGine Example 2: Bow-tie Antenna

- Free-space antenna problem
- Broad-band bow-tie antenna
- Excitation using a discrete voltage port



emGine Example 2: Bow-tie Antenna – Input Impedance

- Number of TLM cells: 216,000; $\Delta l = 1$ mm
- Total simulation time ca 22 seconds (single core, uniform discretization)

