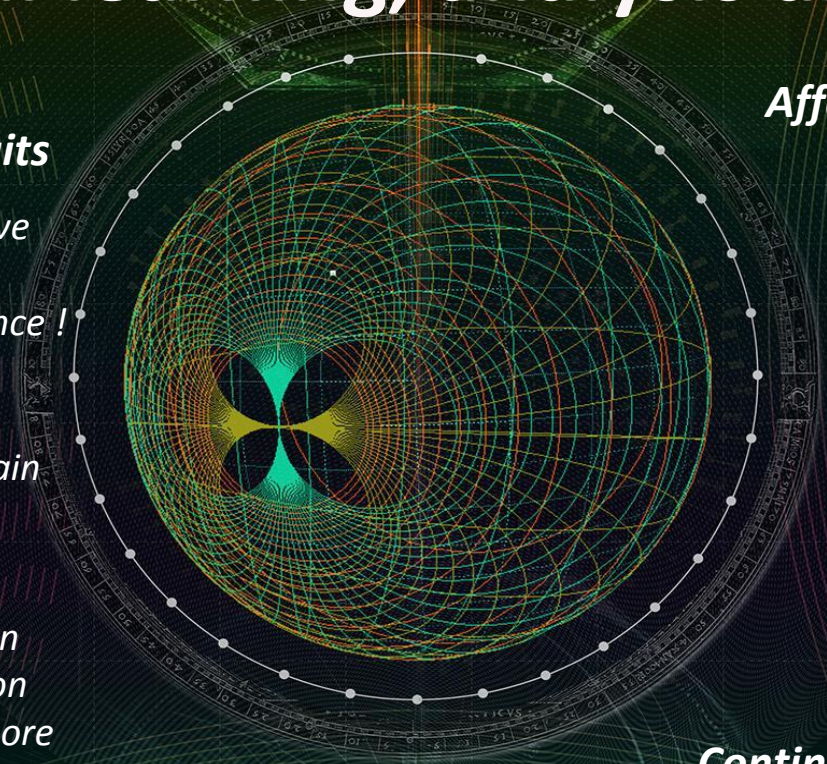
3D Smith Chart

Powerful learning, analysis and design



Advanced tool for high frequency 1 & 2 port circuits

- ✓ *Works for all active& passive microwave circuits, even with negative resistance !*
- ✓ *Amplifier Stability circles*
- ✓ *3D Unilateral transducer gain & group delays & quality factors*
- ✓ *Educational design mode on 2D & 3D Z-Y Smith charts on constant r,x,g,b circles & more*
- ✓ *S parameters*
- ✓ *dynamic frequency sweep & complex ports*

Affordable license

Full 3D visualization

Intuitive user interface

1 minute install

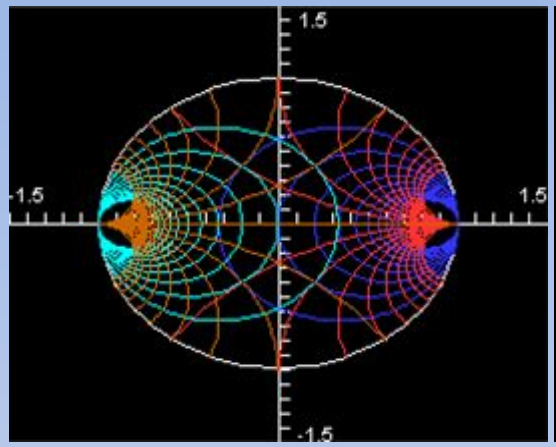
Highly configurable

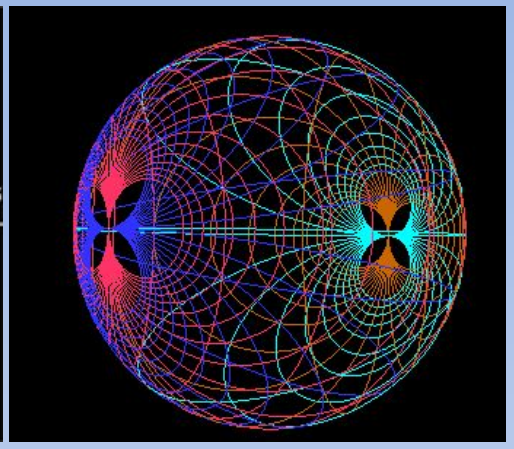
State of the art concepts, backed by recent reputed journal publications

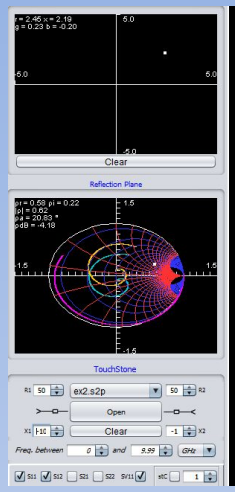
Continuously growing based on community input

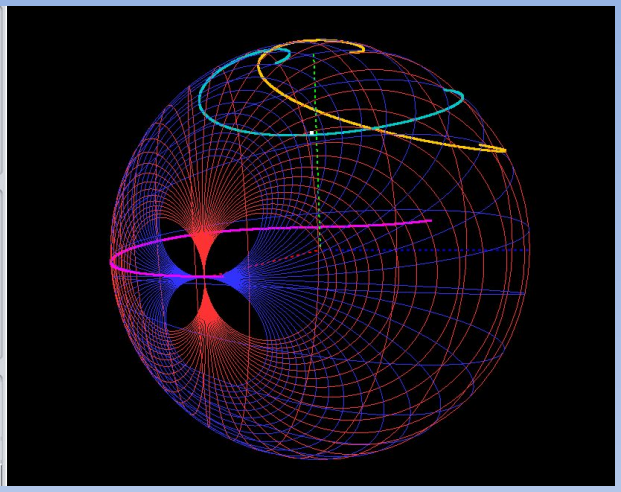
3DSmithChart.com

Analysis mode (S files parameters inputs)



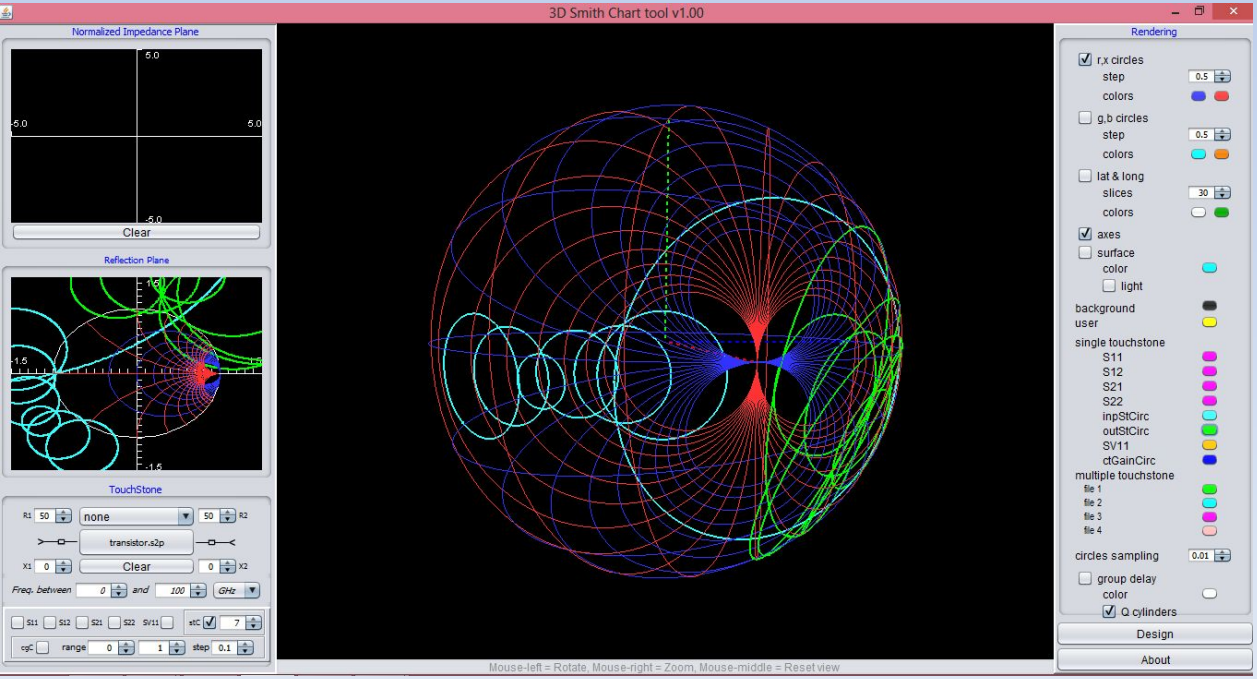




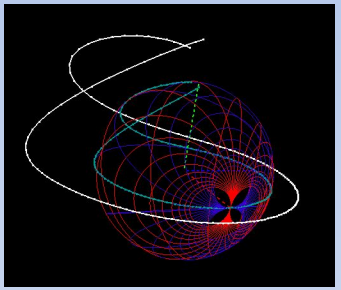


S parameters display
with complex ports tuning & dynamic freq. sweep

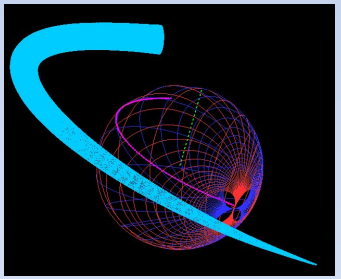
Impedance, Admittance, Amplifier Stability Circles & more –
everything highly configurable



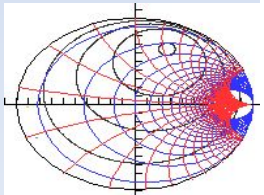
Group delays

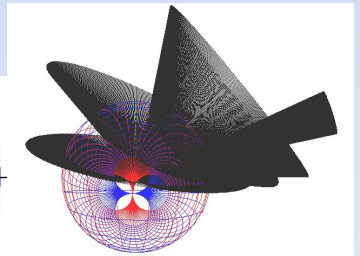


Quality factors



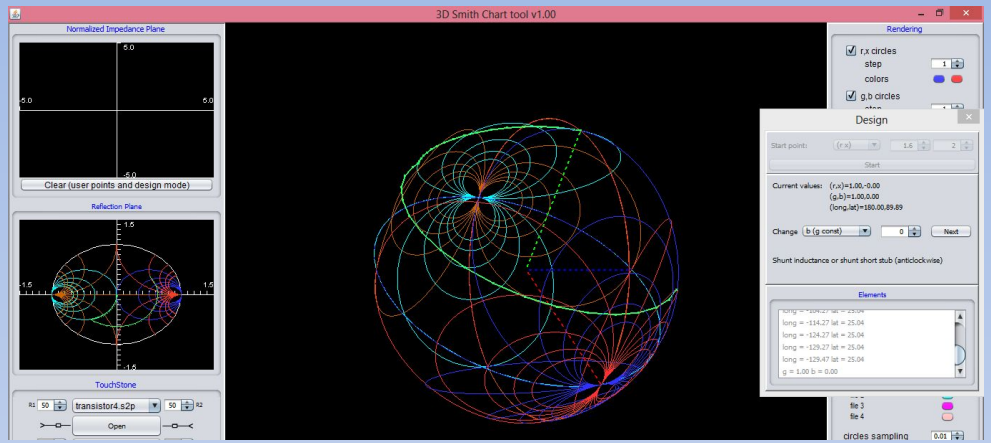
Unilateral power gain

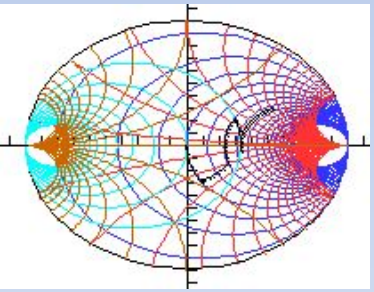


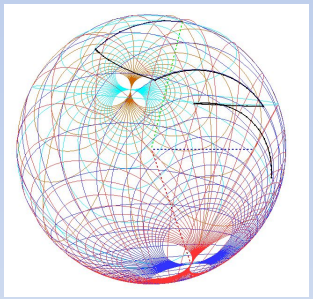


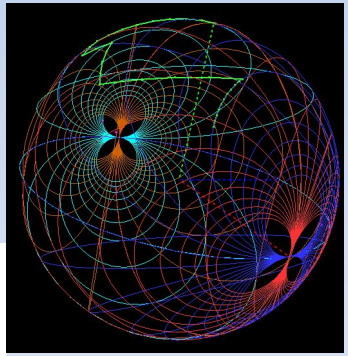
Design mode

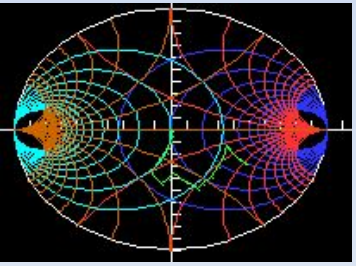
- Move on constant r, x, g, b & constant reflection coefficient circles on 2D & 3D Smith chart

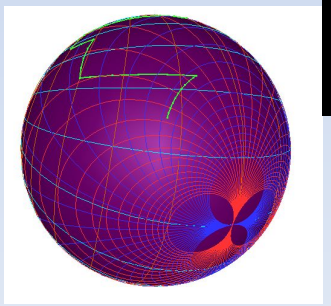






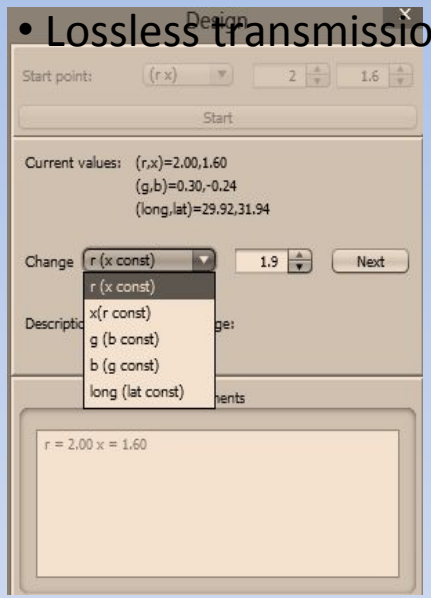


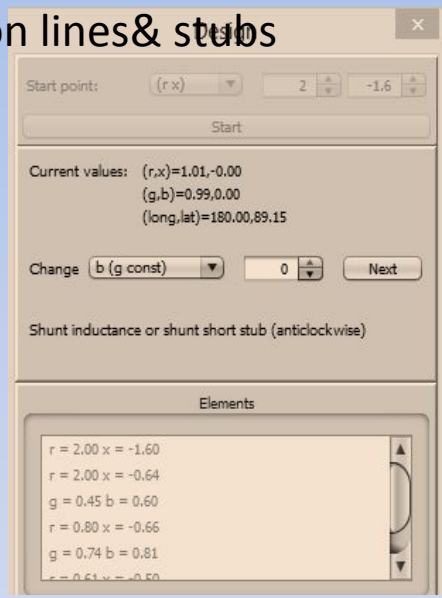




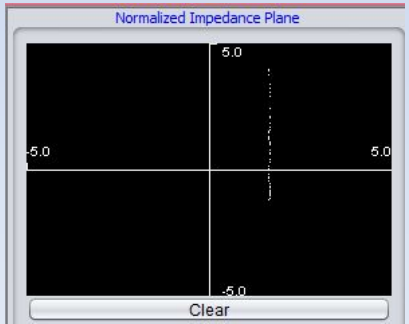
Design mode

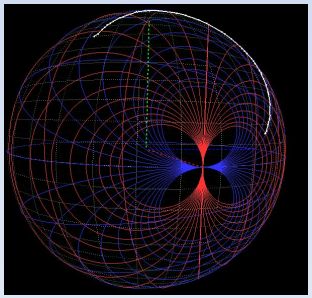
- enables the user to find the (normalized) matching circuits solutions:
- Series resistance, inductance capacitance
- Shunt resistance, inductance, capacitance
- Lossless transmission lines& stubs





Includes S-parameter analysis also for direct drawn loads





Comparative capabilities	Smith chart	3D Smith Chart
Positive resistance	Interior of unity circle	North hemisphere
Negative Resistance (|Reflection coefficient|>1)	NO (towards infinity)	South hemisphere
Perfect match	origin	North pole
|Reflection coefficient|==infinity	NO	South pole
Inductive	Above x axes	East
Capacitive	Below x axes	West
r,x,g,b constant	Circles, circle arcs, 1 line	Circles
Purely resistive	Ox axes	Greenwich meridian
Power levels/group delays	NO	3D space (Exterior >0, Interior <0)

Selected related journal articles

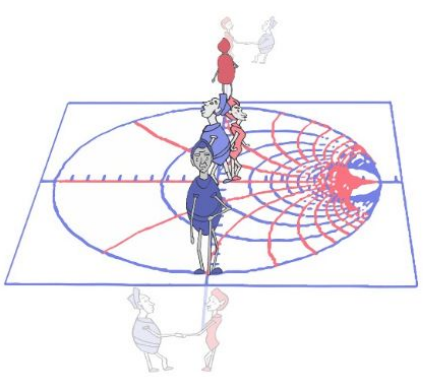
- A.A Muller, E. Sanabria-Codesal, A. Moldoveanu, V. Asavei, S. Lucyszyn " Extended Capabilities of the 3D Smith chart with group delay and resonator quality factor", IEEE Transactions on Microwave Theory and Techniques , vol. 65, No. 1. pp. 10-19, Jan. 2017
- A.A. Muller, E.Sanabria-Codesal, A.Moldoveanu, V. Asavei, P. Soto, V.E. Boria, S. Lucyszyn, "Apollonius Unilateral Transducer Power Gain Circles on 3D Smith charts," IET Electronics Letters, vol. 50 no. 21, pp. 1531-1533, Oct. 2014 .
- A.A. Muller, P. Soto, D. Dascalu, and V.E. Boria, "The Practical Applications of the 3D Smith chart", Microwave Journal, vol. 55, no. 7, pp. 64-72, July 2012
- A.A. Muller, P. Soto, D. Dascalu, D. Neculoiu and V.E. Boria, "A 3D Smith Chart based on the Riemann Sphere for Active and Passive Microwave Circuits," IEEE Microwave and Wireless Components Letters, vol. 21, no. 6, pp. 286-288, June 2011.

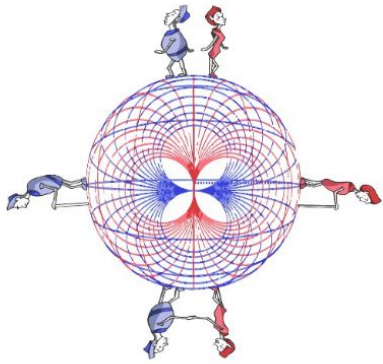
Community

Disruptive innovation

Creativity

Fun





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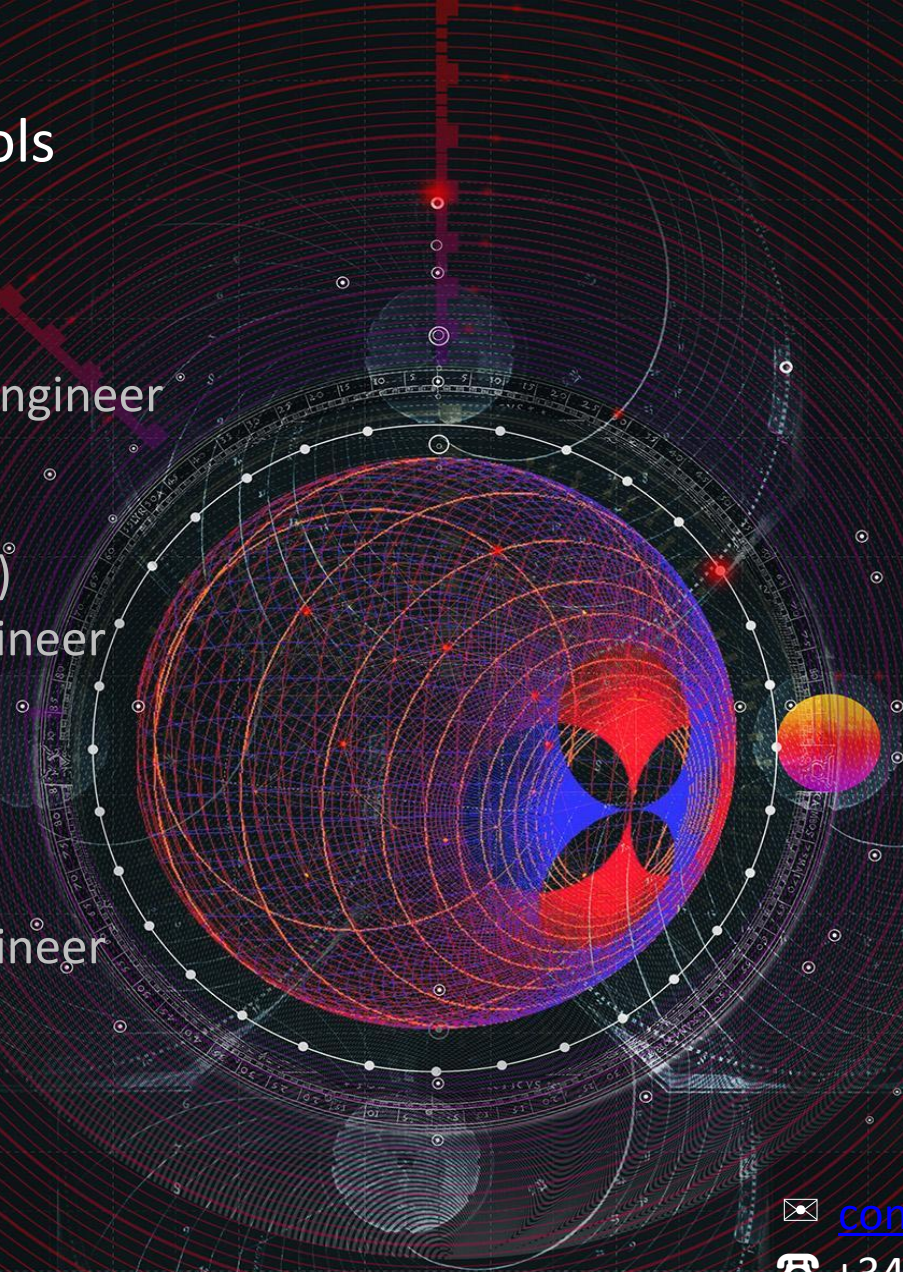

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