

A breakthrough supercomputer for tackling the toughest fractal antenna and electronic designs

FRAGO Cluster™

- **Designs fractal antennas**
- **Designs Fractal Structured Circuits™**
- **Genetic algorithm optimization**
- **PC-cluster supercomputer**
- **Fractal Coded Genome**
- **Million NEC simulations/month**

Designing antennas used to be a black art practiced by pocket protector wearing guys with pointy hats (e.g. our CTO ;-). Not any more. Fractal Antenna Systems has developed and uses a state-of-the-art PC cluster super-computer to design fractal antennas, arrays, and electronics by 'natural selection.' Through the use of our proprietary fractal genome enhanced genetic algorithm, we can evaluate tens of thousands of antenna candidates per day!

From this large population of potential designs, we create extremely high performance fractal antenna designs that optimally trade-off for size, gain and (multi)bandwidth.

Present research into part-less fractal structured RLC circuits for arbitrary filter requirements implemented simply as a trace on a circuit board promise high performance and reliability for the most complex multi stopband and passband filters without the limitations of discrete component choices and configurations.

At Fractal, our staff of experts created the fractal antenna and electronics field and advance the state-of-the-art every day. We welcome the opportunity to take on your toughest electromagnetic design challenges.

Patent Pending.



Fractal Antenna Systems, Inc.



FRAGO Cluster™

As of September 2002, our cluster contains ten 1.4 GHz and six 1.9 GHz Athlon processors operating cooperatively under the control of proprietary genetic optimization code. Robust, fault tolerant, and continuously being upgraded and expanded, the FRAGO cluster routinely executes designs that run 24/7 and evaluates over a million antennas candidates per month.

Core References:

- Alves, N., et.al., 2002, "Fractal Element Antenna Genetic Optimization Using a PC Cluster", Proceedings of ACES, pp 683-688.
- Cohen, N., 1997, "Genetic Antenna Optimization with Fractal Chromosomes", Proceedings of ACES, pp. 305-308.
- Cohen, N., 1997, "Fractal Coding in Genetic Algorithm (GA) Antenna Optimization", Proceedings of IEEE-APS/URSI pp. 1013-1017.
- Haupt, R.L and S.E, 1998, *Practical Genetic Algorithms*. Wiley, ISBN 0471188735
- Hohlfeld, R. G., et. al., 2002 "Prospects for Fractal Coded Genetic Optimization in Electromagnetics", Proc. of ACES, pp 649-654.

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