

Practical Applications of Fractals

17 - 19 November 2004

Miramare, Trieste, Italy

Fractal geometry has become a common tool to describe objects or phenomena in which a scale invariance of some sort exists. The variety of scientific applications is enormous, as such structures exist from physics to astrophysics, from biology to chemistry but also in market fluctuations analysis. However, up to a recent period, fractal concepts were more used to understand than to build.

The period is now appropriate to stress the importance of the practical applications of fractal objects and fractal concepts in many fields of direct importance to industry, communications, environment, and to physiology. The meeting will thus be devoted to the main topics where fractal concepts have direct practical applications.

After an introduction by Benoit Mandelbrot on

"The saga of fractals, from practical questions, to geometry, and back to applications"

the following themes will be discussed:

1- Fractals in industry and man-made fractals:

- Fractal antennae
- Fractal sound barriers
- Use of fractal polymeric surfaces
- Fractal reactor design
- Fractal studies of heterogeneous catalysis
- Petroleum research

2- Natural fractal objects:

- Fractal bronchial trees in mammals
- Growth of fractal trees in nature
- Optimal fractal distribution
- Absolute limitations of tree distributive structures
- River Networks
- Fractals and allometry

3- Applications of fractal concepts to the study of complex systems:

- Image analysis and compression
- Multifractal signal analysis
- Scaling topology of the internet and the www
- Fractal aviation communication network

Scientists and students from all countries which are members of the United Nations, UNESCO or IAEA may attend the Conference. As it will be conducted in English, participants should have an adequate working knowledge of this language. Although the main purpose of the Centre is to help research workers from developing countries, through a programme of training activities within a framework of international cooperation, students and post-doctoral scientists from advanced countries are also welcome to attend.

As a rule, travel and subsistence expenses of the participants should be borne by the home institution. Every effort should be made by candidates to secure support for their fare (or at least half-fare). However, limited funds are available for some participants who are nationals of, and working in, a developing country. There is no registration fee to be paid.

The **Application Form** is obtainable from the ICTP WWW server: **<http://agenda.ictp.trieste.it/smr.php?1617>** (which will be constantly up-dated) or from the activity Secretariat. It should be completed and returned before **31 July 2004** to:

Conference on 'Practical Applications of Fractals'

(smr 1617 - c/o Ms. Rosanna Sain)

the Abdus Salam International Centre for Theoretical Physics
Strada Costiera 11, 34014 Trieste, Italy.

or

smr1617@ictp.trieste.it (please save and send file attachments in RTF format)

ORGANIZERS:

B. SAPOVAL (Ecole Polytechnique)

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DEADLINE
for requesting participation

31 July 2004

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