PROCEEDINGS

# 53. IWK

Internationales Wissenschaftliches Kolloquium
International Scientific Colloquium

Faculty of
Mechanical Engineering

# PROSPECTS IN MECHANICAL ENGINEERING

8 - 12 September 2008

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TECHNISCHE UNIVERSITÄT
ILMENAU

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http://www.db-thueringen.de/servlets/DocumentServlet?id=17534

**Published by**
**Impressum**

| | |
|---|---|
| Publisher<br>Herausgeber | Der Rektor der Technischen Universität Ilmenau<br>Univ.-Prof. Dr. rer. nat. habil. Dr. h. c. Prof. h. c. Peter Scharff |
| Editor<br>Redaktion | Referat Marketing und Studentische Angelegenheiten<br>Andrea Schneider |
| | Fakultät für Maschinenbau<br>Univ.-Prof. Dr.-Ing. habil. Peter Kurz,<br>Univ.-Prof. Dr.-Ing. habil. Rainer Grünwald,<br>Univ.-Prof. Dr.-Ing. habil. Prof. h. c. Dr. h. c. mult. Gerd Jäger,<br>Dr.-Ing Beate Schlütter,<br>Dipl.-Ing. Silke Stauche |
| Editorial Deadline<br>Redaktionsschluss | 17. August 2008 |
| Publishing House<br>Verlag | Verlag ISLE, Betriebsstätte des ISLE e.V.<br>Werner-von-Siemens-Str. 16, 98693 Ilmenau |

**CD-ROM-Version:**

| | |
|---|---|
| Implementation<br>Realisierung | Technische Universität Ilmenau<br>Christian Weigel, Helge Drumm |
| Production<br>Herstellung | CDA Datenträger Albrechts GmbH, 98529 Suhl/Albrechts |

ISBN: 978-3-938843-40-6 (CD-ROM-Version)

**Online-Version:**

| | |
|---|---|
| Implementation<br>Realisierung | Universitätsbibliothek Ilmenau<br>ilmedia<br>Postfach 10 05 65<br>98684 Ilmenau |



**Home / Index:**
http://www.db-thueringen.de/servlets/DocumentServlet?id=17534

53rd Internationales Wissenschaftliches Kolloquium
Technische Universität Ilmenau
08 – 12 September 2008

V. Musalimov, L. Musalimova, V. Valetov

# Dynamics of Nanoscales

This paper describes overhybridizated spherical molecules which can be geometrically modeled by dual correct polyhedrons. It is shown, that nano measurement is a dual dynamic process which can be simulated as Lorenz attractor.

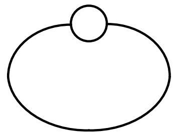
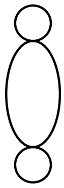
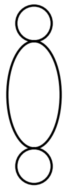
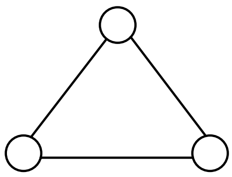
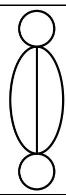
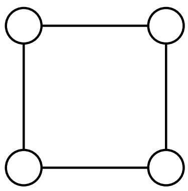
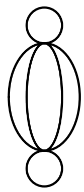
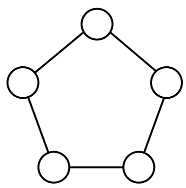
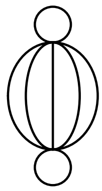
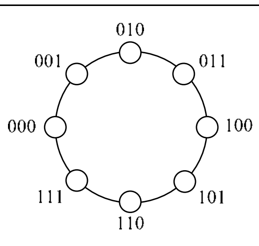
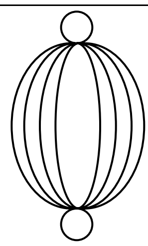
Taking into consideration the result of recent analytical study presented in this paper we shall assume, that it is advisable to use dyadic scales. We shall develop the concept of a system of coordinates, making a start, firstly, from a ruler with discrete labels. Secondly, making a start from graphs, dual to a cycle with two sides, v-tops and d-edges. We shall take arbitrarily small, but final intervals x between labels of rulers or coordinate axes. In the table there are some integer rings where the numbers are presented according to the order of lines from 2 up to 5. The designations of q-number of sides are introduced. Besides that, H- binary information shows that there is some point in one of intervals of a ruler-ring, P- probability of that a point lays in an interval, ld- logarithm on the basis 2.In addition, Euler's formula holds true for polygonal graphs $v + q = d + 2$.

We should take into consideration that there are only the 1st, 2nd, 4th and 6th rings containing labels with numbers 2N where N- denotes integers 0,1,2…Moreover, in the given table the values of H are represented in bits, so for example, for a cycle, according to the given points of the table 2, the information means that some point is considered to be in one binary interval and can only make 1 bit.

Therefore, the graphs' edges have an information component. We shall note that their sides are tops' transformers as for the tops-they are sides' transformers of an initial elementary cycle. A dual graphs is an original "space of images". Besides that, so-called infinite side, external to a cycle, is also taken into consideration. The number of edges at both graphs is identical. Here, we can estimate a probability of a point arrangement between any pair of dual graph of adjacent sides.

In conclusion, correct graphs which are isomorphic to dodecahedron with icosahedron are analyzed. The scenario of information exchange between sides and tops by means of Lorenz dynamic system will be presented. It is shown, that the dynamics of information exchange is a necessary element for deeper understanding some processes which take place in the nanoworld.

Table 1 Elementary cycles and dual graphs

| N/N | Ring types | Elementary cycles | | V | q | d | Dual graphs | V | q | d |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | zero |  | $P=1;$ $d=2^0=1;$ $H=ld2^0=0$ | 2 | 1 | 1 |  | 1 | 2 | 1 |
| 2 | dyadic |  | $P=\frac{1}{2}=2^{-1};$ $d=2^1=2;$ $H=ld2^{-1}=1$ | 2 | 2 | 2 |  | 2 | 2 | 2 |
| 3 | ternary |  | $P=\frac{1}{3};$ | 3 | 2 | 3 |  | 2 | 3 | 3 |
| 4 | tetral |  | $P=\frac{1}{4}=2^{-2};$ $d=2^2=4;$ $H=-ld2^{-2}=2$ | 4 | 2 | 4 |  | 2 | 4 | 4 |
| 5 | pentary |  | $P=\frac{1}{5};$ | 5 | 2 | 5 |  | 2 | 5 | 5 |
| 6 | octal |   | $P=\frac{1}{8}=2^{-3};$ $d=2^3=8;$ $H=-ld2^{-3}=3$ | 8 | 2 | 8 |  | 2 | 8 | 8 |

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