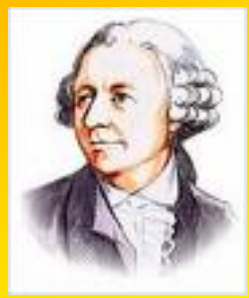
Projekat ON144002 -Seminar

NONLINEAR DYNAMICS
MILUTIN MILANKOVIĆ



IN HONOR OF

LEONHARD EULER

(1707-1783)

300-th Anniversary

At Centre for Nonlinear Dynamics and Active Structures
Mechanical Engineering University of NiŠ

Centre for Nonlinear Dynamics and Active Structures
Mechanical Engineering University of NiŠ

Projekat ON144002 -Seminar

NONLINEAR DYNAMICS - MILUTIN MILANKOVIĆ

IN HONOR OF

LEONHARD EULER

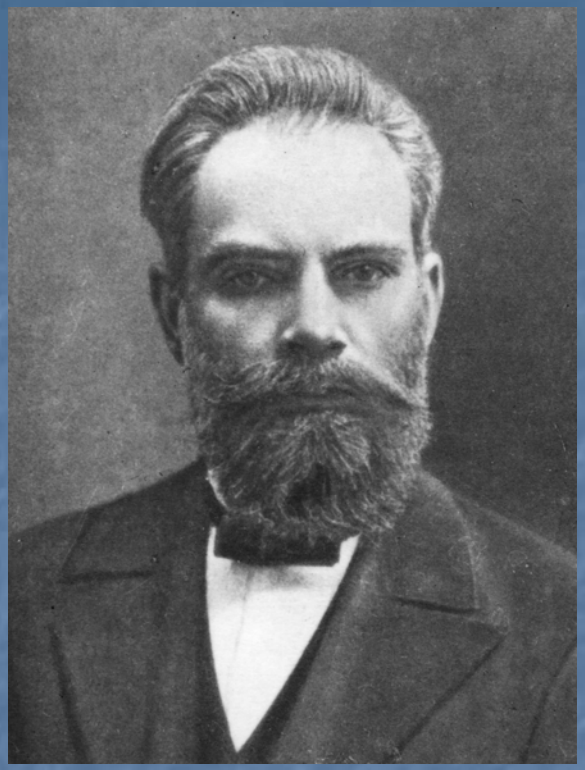
300-th Anniversary

Katica (Stevanović) HEDRIH
Faculty of Mechanical Engineering University of [illegible],
Mathematical Institute SANU
Yu-18 000 - Niš, ul. Vojvode Tankosića 3/22, Serbia and Montenegro,
Telefax: 381 18 2 41 663 / Mob 063 8 75 75 99
*e-mail: katica@masfak.ni.ac.yu * e-mail(houm): khedrih@eunet.yu*

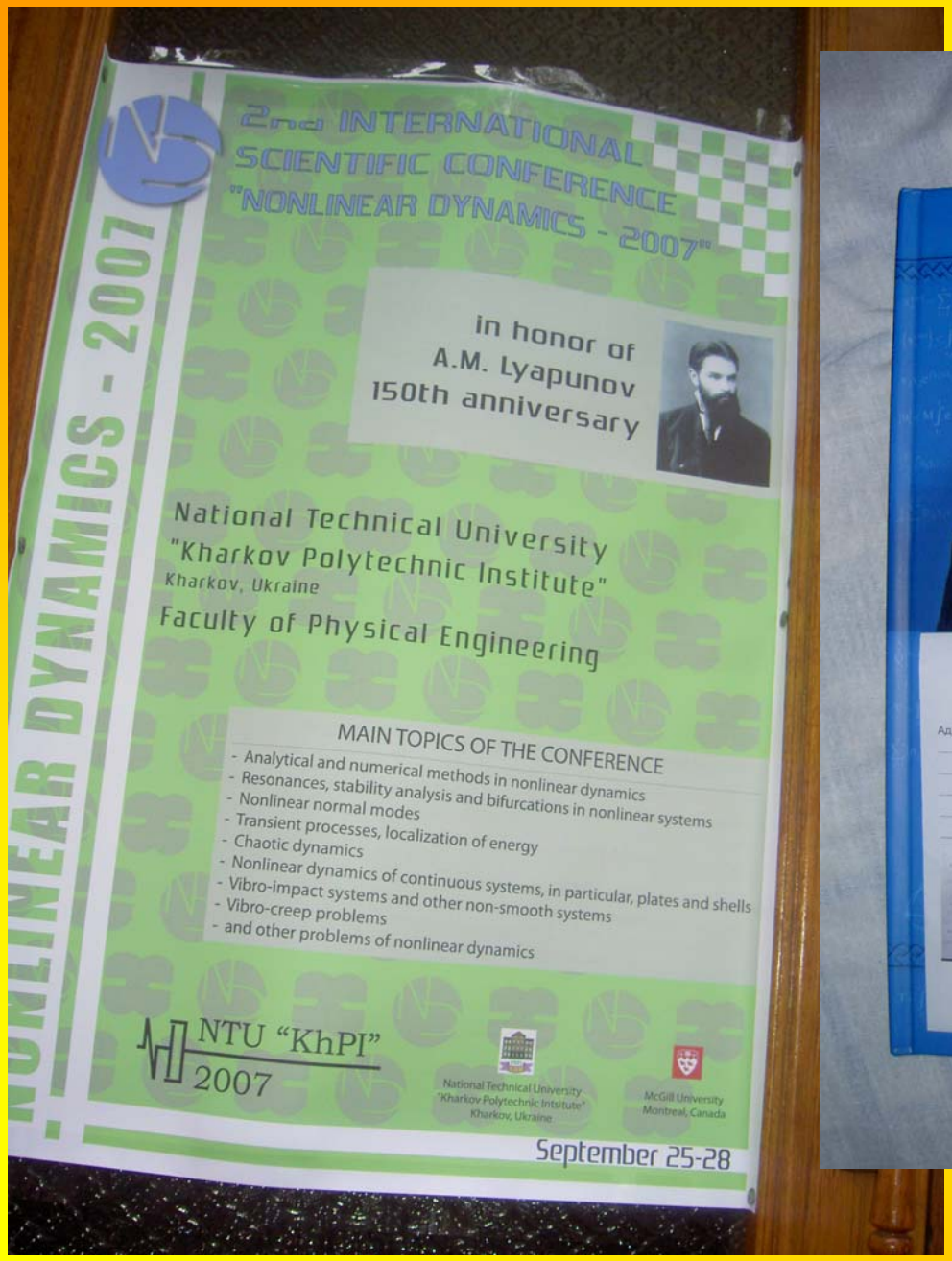
LEONHARD EULER

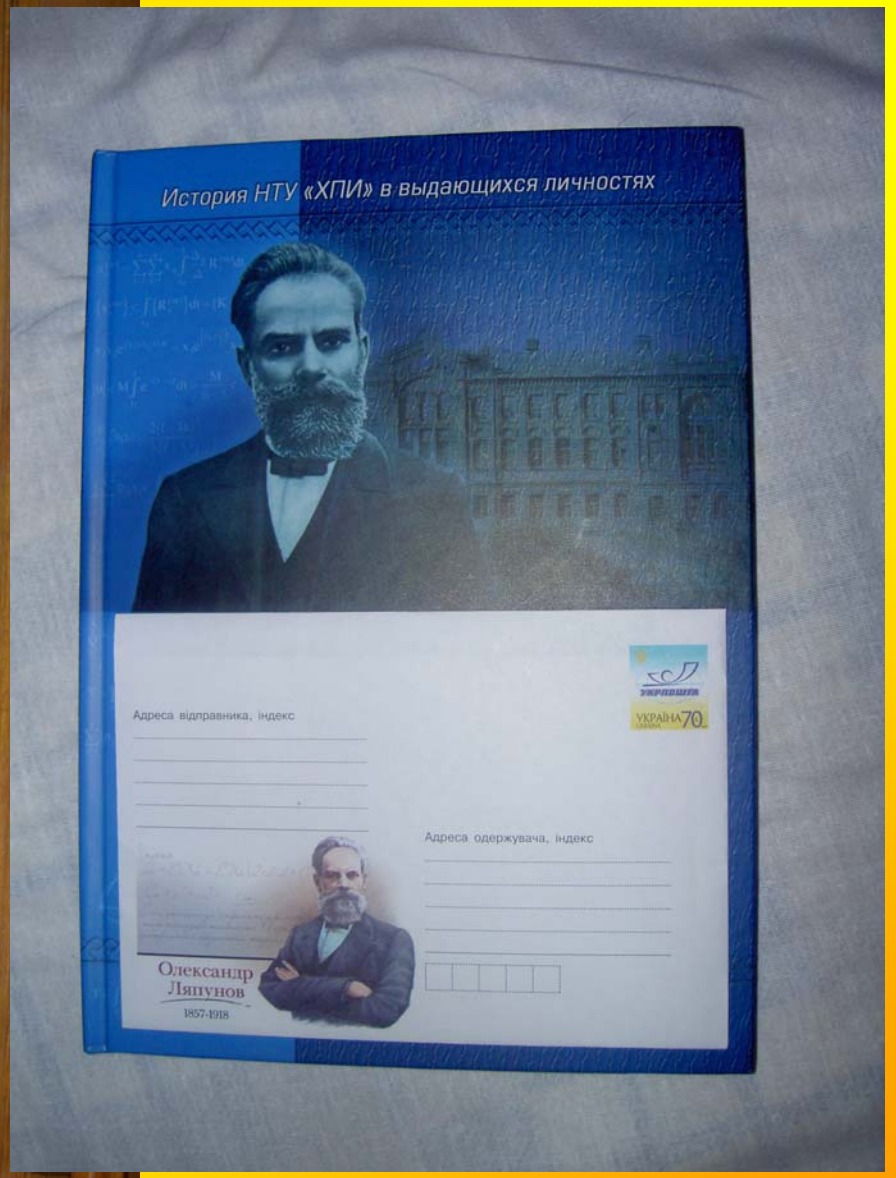
(1707-1783)

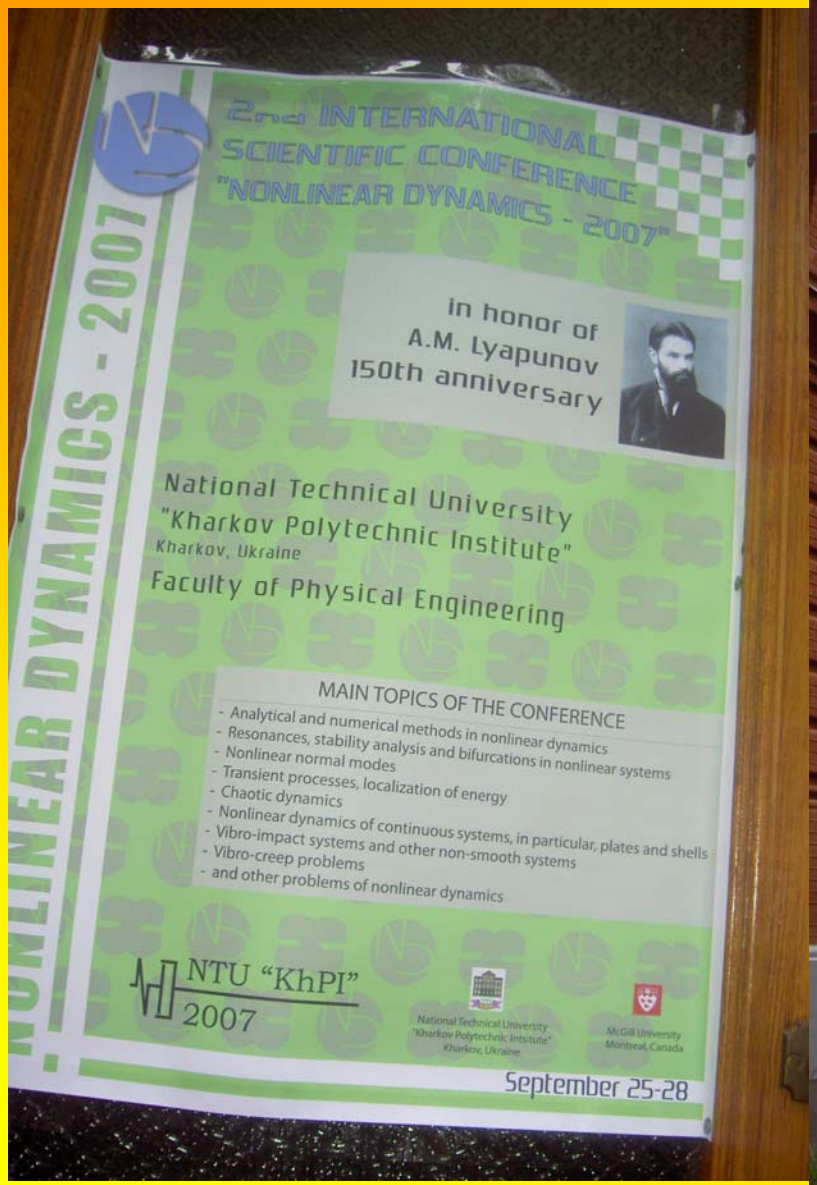
300-th Anniversary



Academician A.M.Lyapunov's activity at Kharkov Technological Institute


NONLINEAR DYNAMICS - 2007
2nd INTERNATIONAL SCIENTIFIC CONFERENCE "NONLINEAR DYNAMICS - 2007"
in honor of A.M. Lyapunov 150th anniversary
National Technical University "Kharkov Polytechnic Institute"
Kharkov, Ukraine
Faculty of Physical Engineering
MAIN TOPICS OF THE CONFERENCE
- Analytical and numerical methods in nonlinear dynamics
- Resonances, stability analysis and bifurcations in nonlinear systems
- Nonlinear normal modes
- Transient processes, localization of energy
- Chaotic dynamics
- Nonlinear dynamics of continuous systems, in particular, plates and shells
- Vibro-impact systems and other non-smooth systems
- Vibro-creep problems
- and other problems of nonlinear dynamics
NTU "KhPI" 2007
National Technical University "Kharkov Polytechnic Institute" Kharkov, Ukraine
McGill University Montreal, Canada
September 25-28


История НТУ «ХПИ» в выдающихся личностях
Адреса відправника, індекс
Адреса одержувача, індекс
Олександр Ляпунов
1857-1918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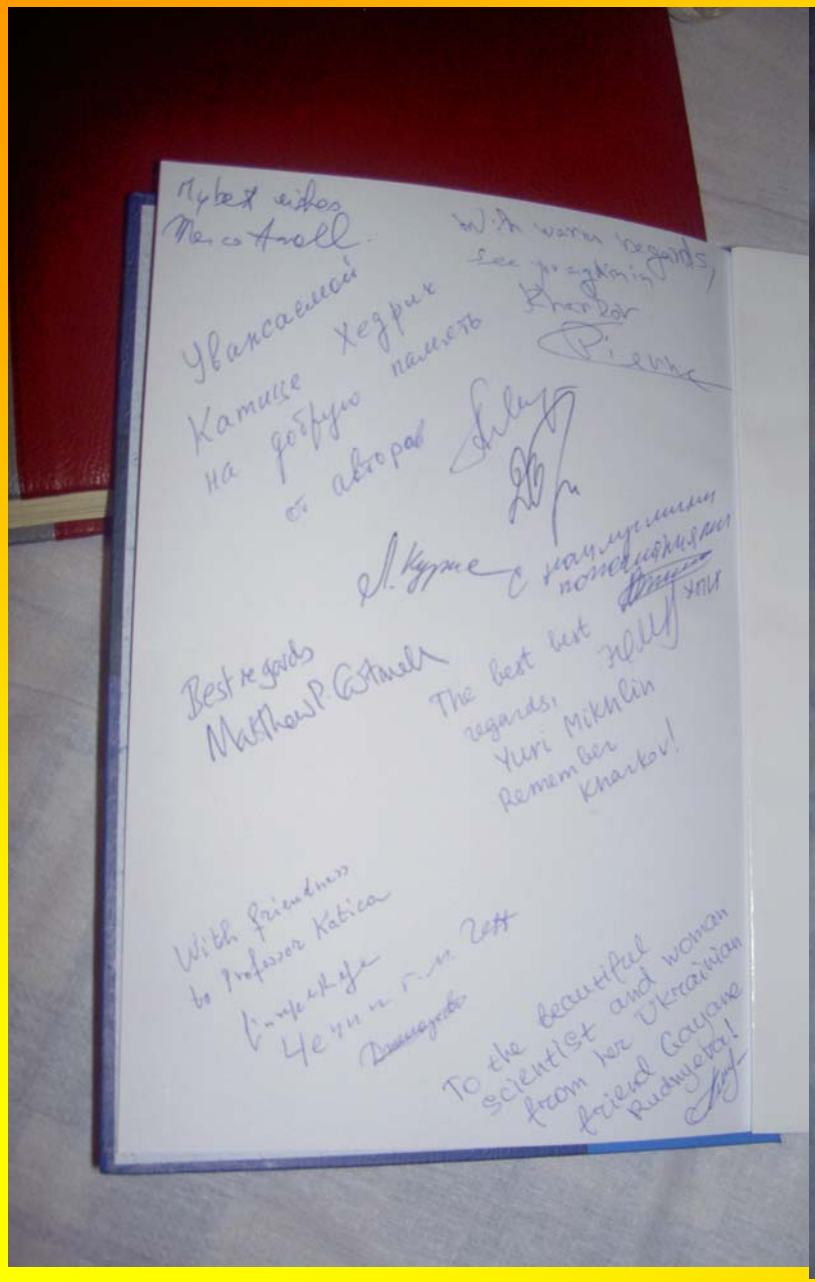
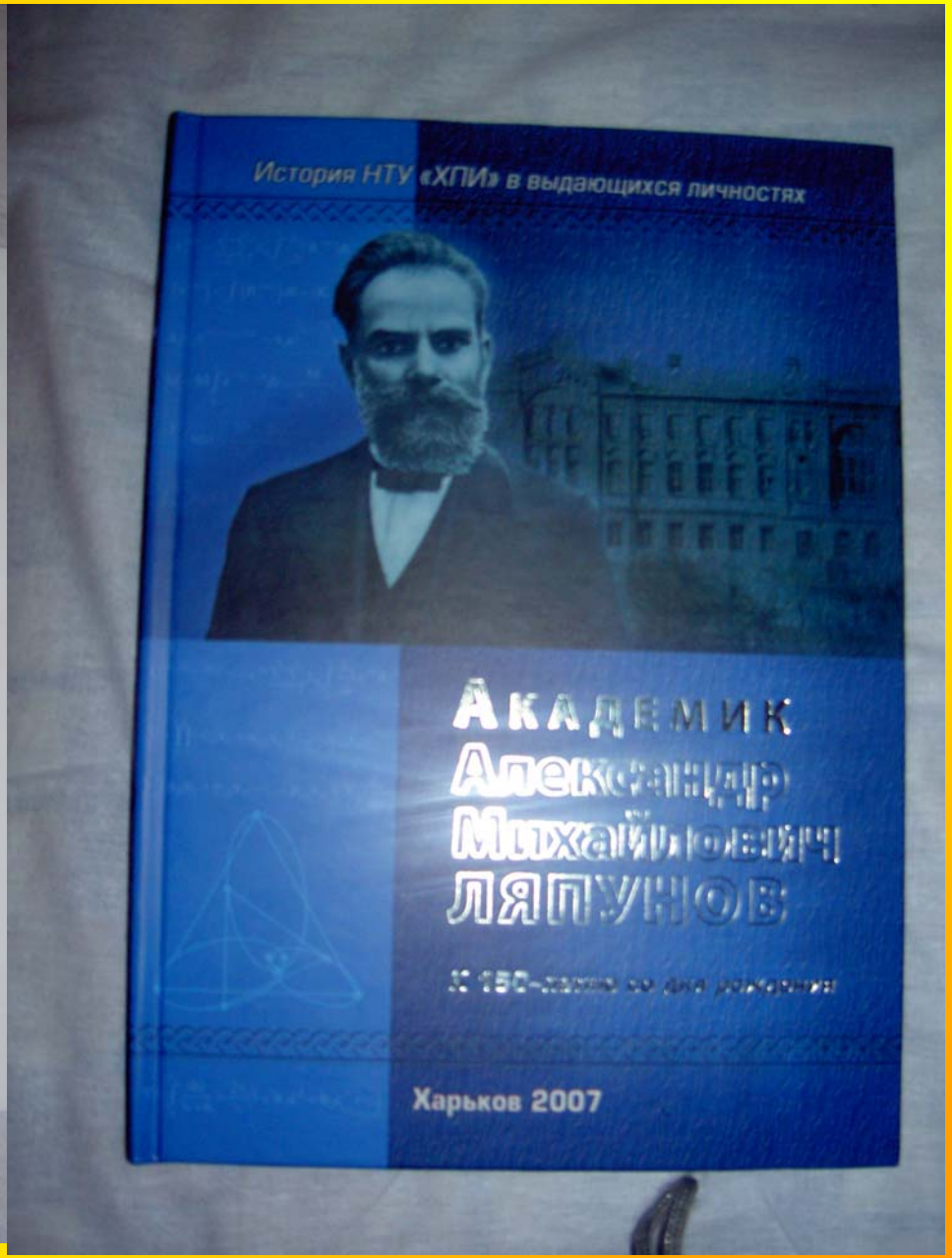
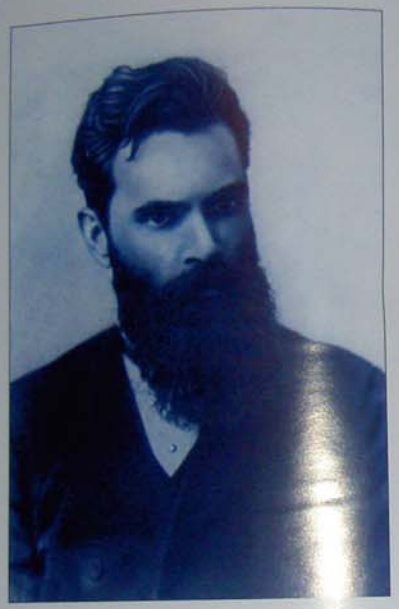

Уважаемой
Катюше Хедрик
на добрую память
от авторов
Best regards
Matthew P. Gotwals
The best best
regards,
Yuri Mikhlin
Remember
Kharkov!
With friendship
to Professor Katica
Дружбу
To the beautiful
scientist and woman
from her Ukrainian
friend Gaiane
Rudnyeva!


История НТУ «ХПИ» в выдающихся личностях
АКАДЕМИК
Александр
Михайлович
ЛЯПУНОВ
Харьков 2007



Александр Михайлович ЛЯПУНОВ

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ УКРАИНЫ
НАЦИОНАЛЬНЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ
«Харьковский политехнический институт»

АКАДЕМИК

Александр Михайлович

ЛЯПУНОВ

К 150-летию со дня рождения

Монография

Под общей редакцией проф. Л. Л. Товажнянского

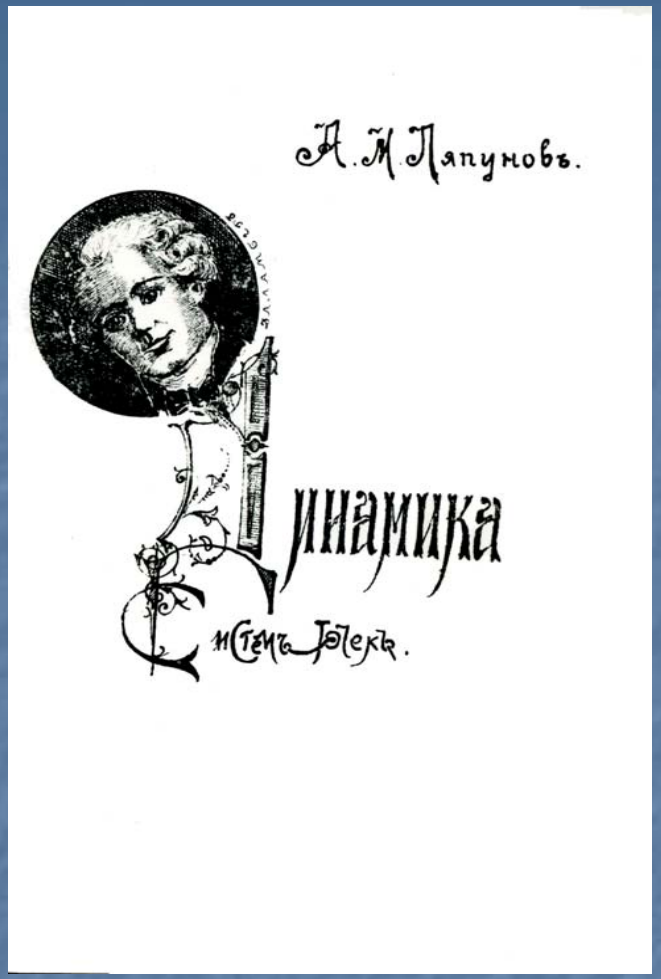
Харьков НТУ «ХПИ» 2007

КИНЕМАТИКА.

Лекціи проф. А. Ляпунова

Изданіе студ. В. Сиренко.

Харьковъ
Литографія Шванченко
1900 г.



Lyapunov' lecture courses published in Kharkov

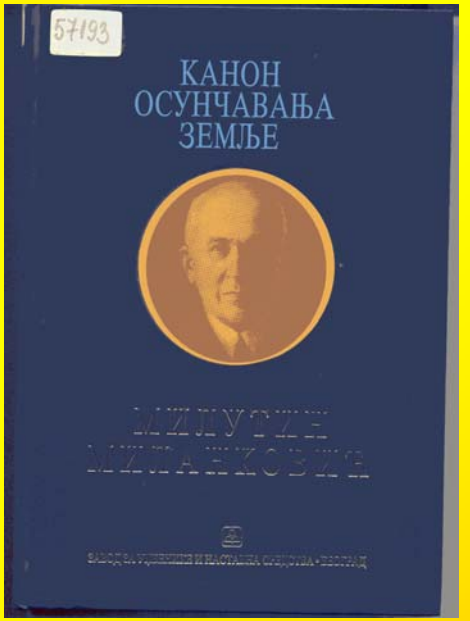

ЛЯПУНОВ
ОЛЕКСАНДР
МИХАЙЛОВИЧ
ТУТ У 1887-1893 Р.Р.
ПРАЦЮВАВ ВСЕСВІТНЬО
ВІДОМИЙ ВЧЕНИЙ -
МАТЕМАТИК
ТА МЕХАНІК,
АКАДЕМІК

„У властитој радионици"

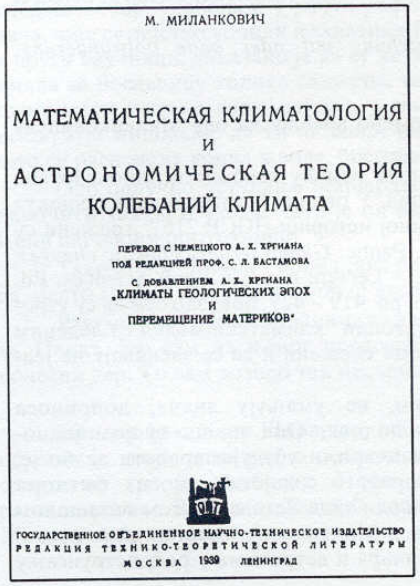
М. Миланковић у радној соби у свом дому у Београду (улица Љубе Стојановића бр. 9). У позадини, на зиду назире се портрет И. Њутна коме је Миланковић посветио најлепше странице историје наука.

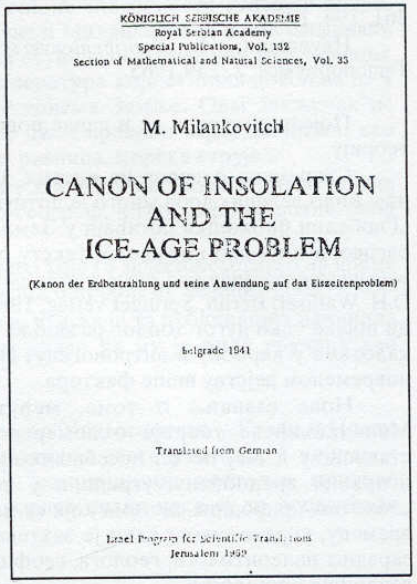
„In his own workshop"

M. Milanković in the study in his home in Belgrade (Ljube Stojanovića Street number 9). In the background, on the wall one perceives a portrait of I. Newton to whom Milanković dedicated the most beautiful pages of the history of sciences.

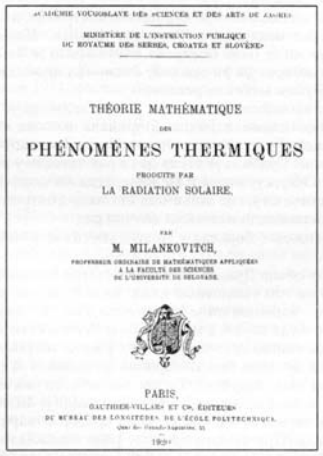


НАСЛОВНА СТРАНА ОРИГИНАЛА





Слика 4 – Руски превод Математичке климатологије и астрономска теорија колебања климе и енглески превод Миланковићевог Канона осунчавања



ACADÉMIE YOUGOSLAVE DES SCIENCES ET DES ARTS DE AGRAM

MINISTÈRE DE L'INSTRUCTION PUBLIQUE
DU ROYAUME DES SERBES, CROATES ET SLOVÈNES

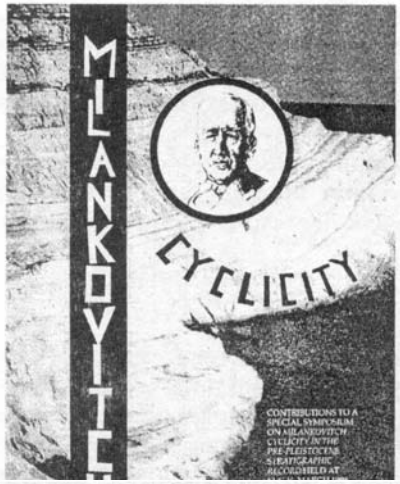
THÉORIE MATHÉMATIQUE
DES
PHÉNOMÈNES THERMIQUES
PRODUITS PAR
LA RADIATION SOLAIRE,

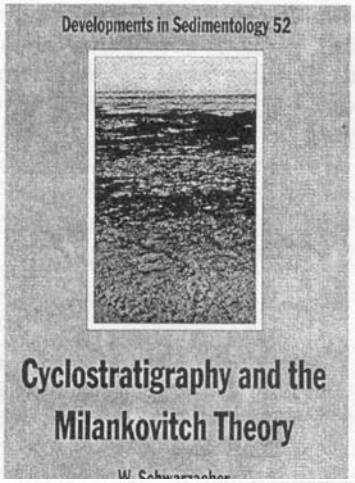
PAR
M. MILANKOVITCH,
PROFESSEUR ORDINAIRE DE MATHÉMATIQUES APPLIQUÉES
À LA FACULTÉ DES SCIENCES
DE L'UNIVERSITÉ DE BELGRADE.

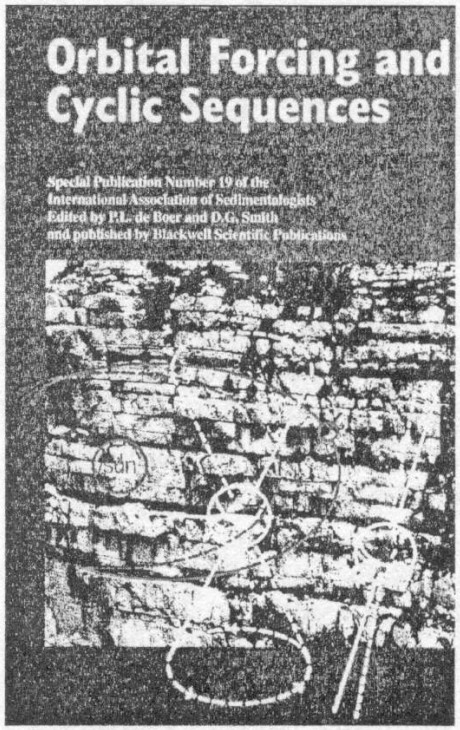
PARIS,
GAUTHIER-VILLARS ET Cie, ÉDITEURS
DU BUREAU DES LONGITUDES, DE L'ÉCOLE POLYTECHNIQUE.

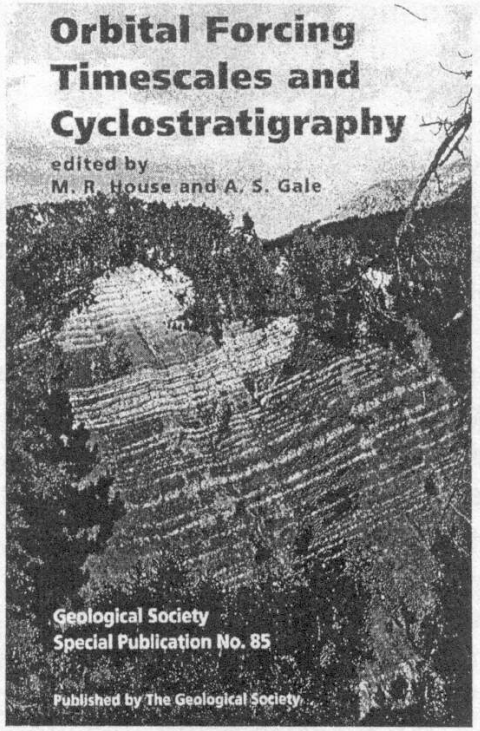
1920

Слика 3 – Насловна страна Милнаковићеве математичке теорије климе, издате у Паризу.





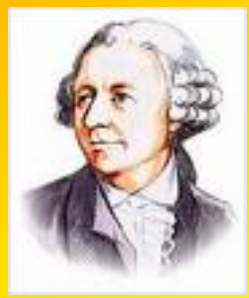




Слика 9 – Неке новије књиге засноване на Миланковићевом Канону

Projekat ON144002 -Seminar

NONLINEAR DYNAMICS
MILUTIN MILANKOVIĆ



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Faculty of Mechanical Engineering University of [illegible],
Mathematical Institute SANU
Yu-18 000 - Niš, ul. Vojvode Tankosića 3/22, Serbia and Montenegro,
Telefax: 381 18 2 41 663 / Mob 063 8 75 75 99
*e-mail: katica@masfak.ni.ac.yu * e-mail(houm): khedrih@eunet.yu*

LEONHARD EULER

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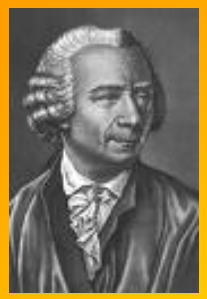
300-th Anniversary



Leonhard Euler
300 x 453 - 33k - jpg
www.et.fh-koeln.de

Leonhard Euler
614 x 767 - 668k - png
www.mathematik.de

Leonhard Euler (1707-1783) was **...**
260 x 337 - 99k - gif

Leonhard Euler (1707-1783) and his **...**
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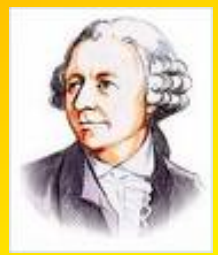
agutie.homestead.com



Leonhard Euler
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Leonhard Euler
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Portrait of **Leonhard Euler**
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Grab von **Leonhard Euler** in Sankt **...**
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Gedenktafel für **Leonhard Euler** in **...**
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[Нешто више са www.w-volk.de]

Leonhard Euler
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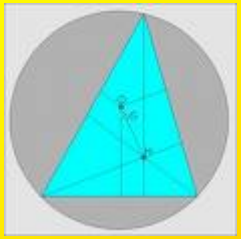
mathematica.ludibunda.ch



Leonhard Euler Biography (1707–83)
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Leonhard Euler
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Oris Jubiläumsuhr **Leonhard Euler** im **...**
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Leonhard Euler (1707-1783)
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projecteuler.net

Biografie: **Leonhard Euler**
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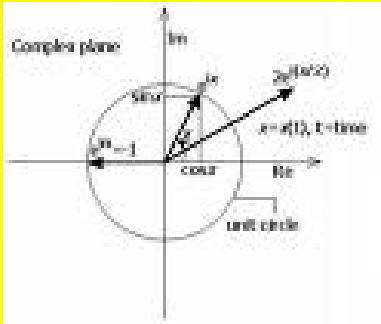

... Leonhard Euler (1707-1783).
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Leonhard Euler (1707-1783), **...**
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Leonhard Euler: **Leonhard** Euler's **...**
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Leonhard Euler
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Leonhard Euler
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Page 31 **Leonhard Euler** (as in oiler **...**
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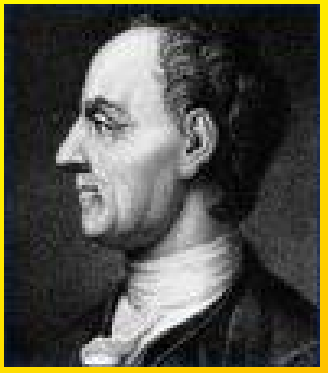

Leonhard Euler was the most **...**
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Leonhard Euler'. Леонард Эйлер **...**
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unser Gebäude an der **Leonhard-Euler- ...**
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Leonhard Euler geb.
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statistik.mathematik.uni-wuerzburg.de

Euler vollendete 1771 seine **...**
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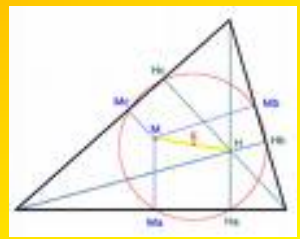
www.didaktik.mathematik.uni-wuerzburg.de



... ludibunda - **Leonhard Euler**
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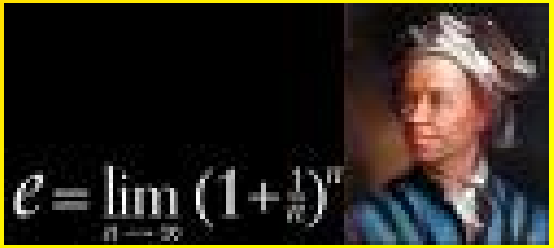

Leonhard Euler (1707–1783).
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... von **Leonhard Euler** erdacht, **...**
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www.sharewareconnection.com

Timbre poste 130 «**Leonhard Euler**»
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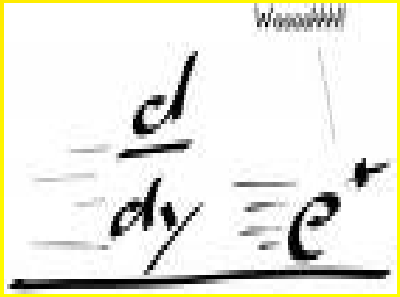

Geburtstag von **Leonhard Euler**.
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Der Mathematiker **Leonhard Euler ...**
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8	7	9	5	6	1	3	4	2
5	3	6	7	4	2	9	8	1
1	4	2	8	9	3	7	6	5
7	5	8	9	3	4	1	2	6
3	6	1	2	7	8	4	5	9
9	2	4	1	5	6	8	3	7
6	8	7	4	1	5	2	9	3
4	1	3	6	2	9	5	7	8
2	9	5	3	8	7	6	1	4

... Leonhard Euler im 18.
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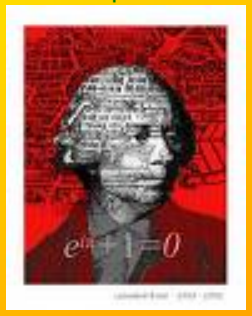
reinhold.blog.de



Leonhard Euler, 1707 - 1783
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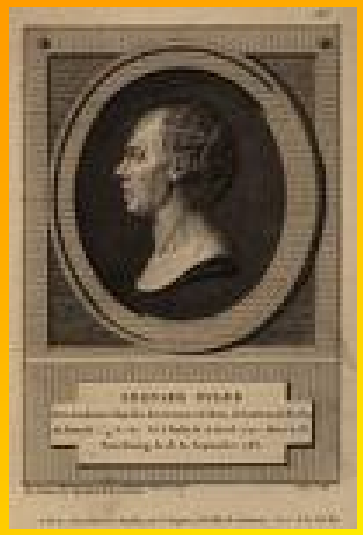
www.mathematicianspictures.com



Portrait of **Leonhard Euler**
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«**Leonhard Euler** Swiss mathematician
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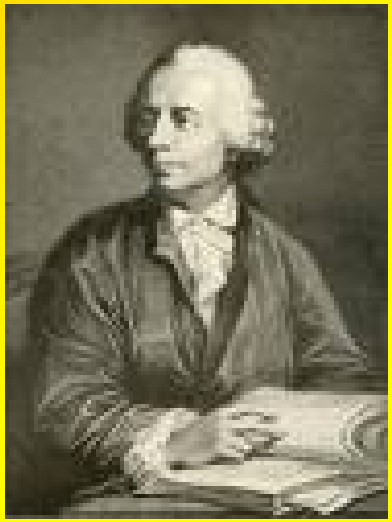
www.chess-theory.com



Leonhard Euler (1707-1783)
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www.didaktik.mathematik.uni-wuerzburg.de

Leonhard Euler 101kB
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th.physik.uni-frankfurt.de

Leonhard Euler
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www.ams.org

... von **Leonhard Euler** (1707-1783)
...
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Leonhard Euler: Vollständige **...**
200 x 240 - 15k - jpg
www.ub.uni-dortmund.de

Leonhard Euler currency
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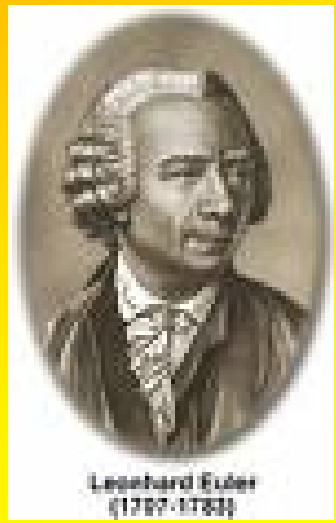

Leonhard Euler is best known as a
...
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micro.magnet.fsu.edu

Leonhard Euler (c) 2001 B. Krämer.
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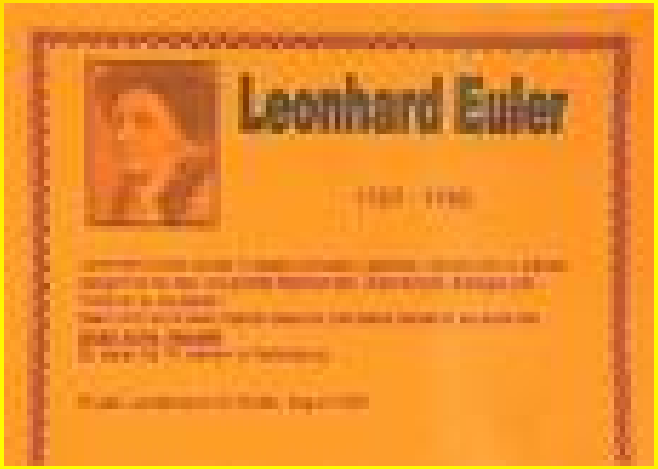

... Mathematiker: **Leonhard Euler**
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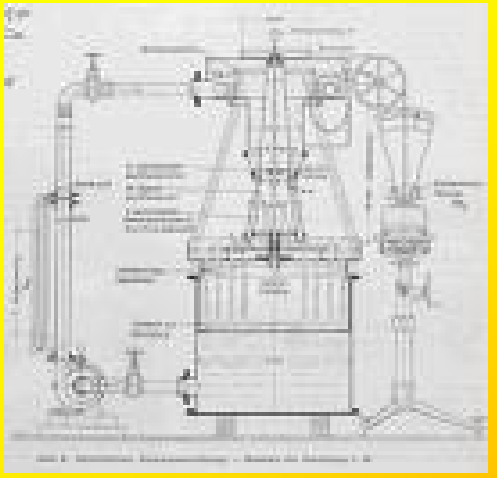

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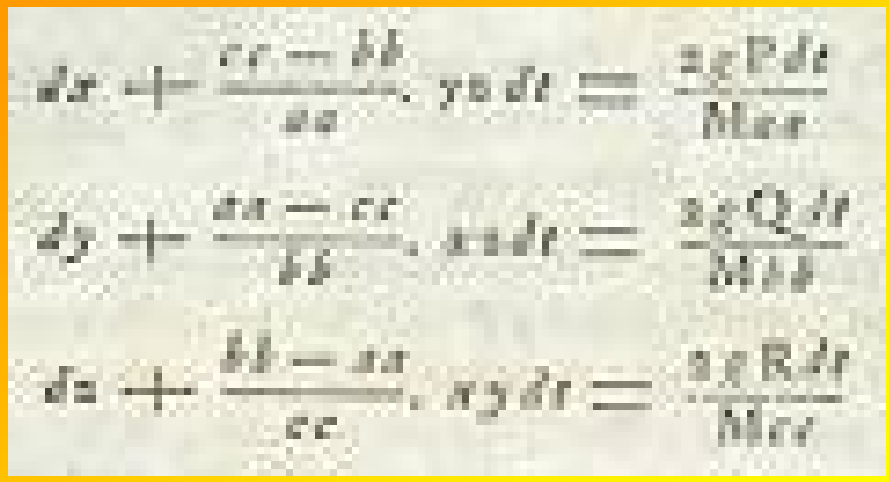

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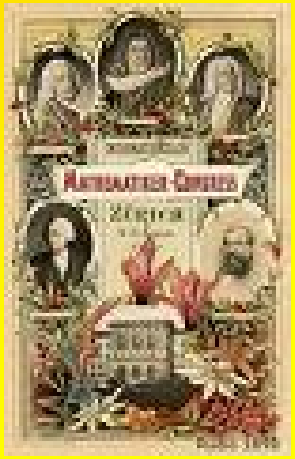

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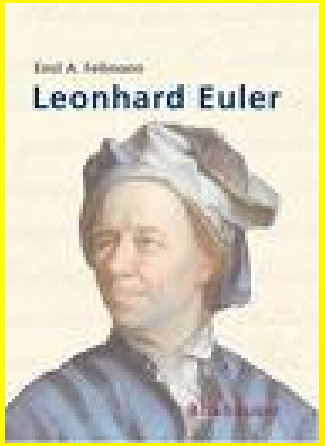

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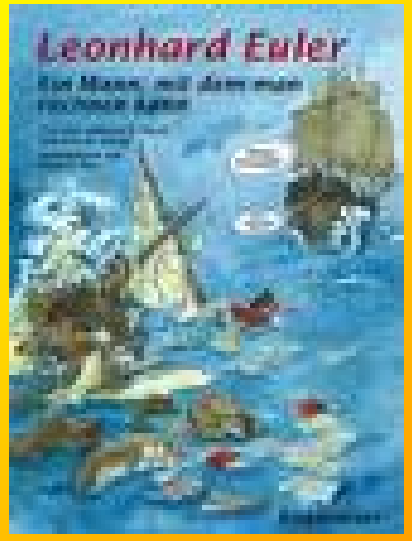

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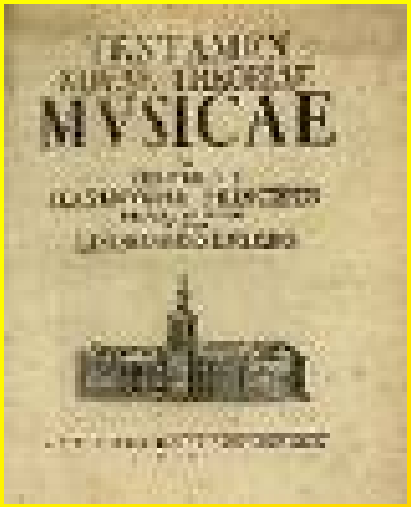

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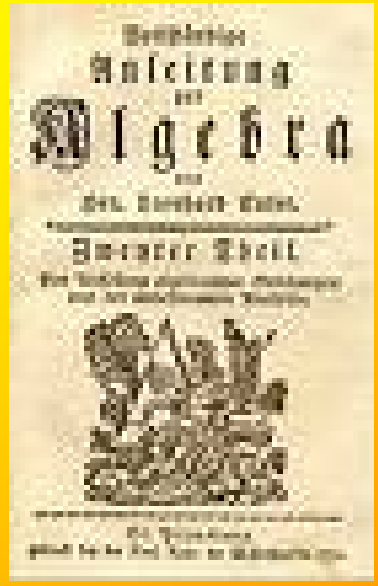

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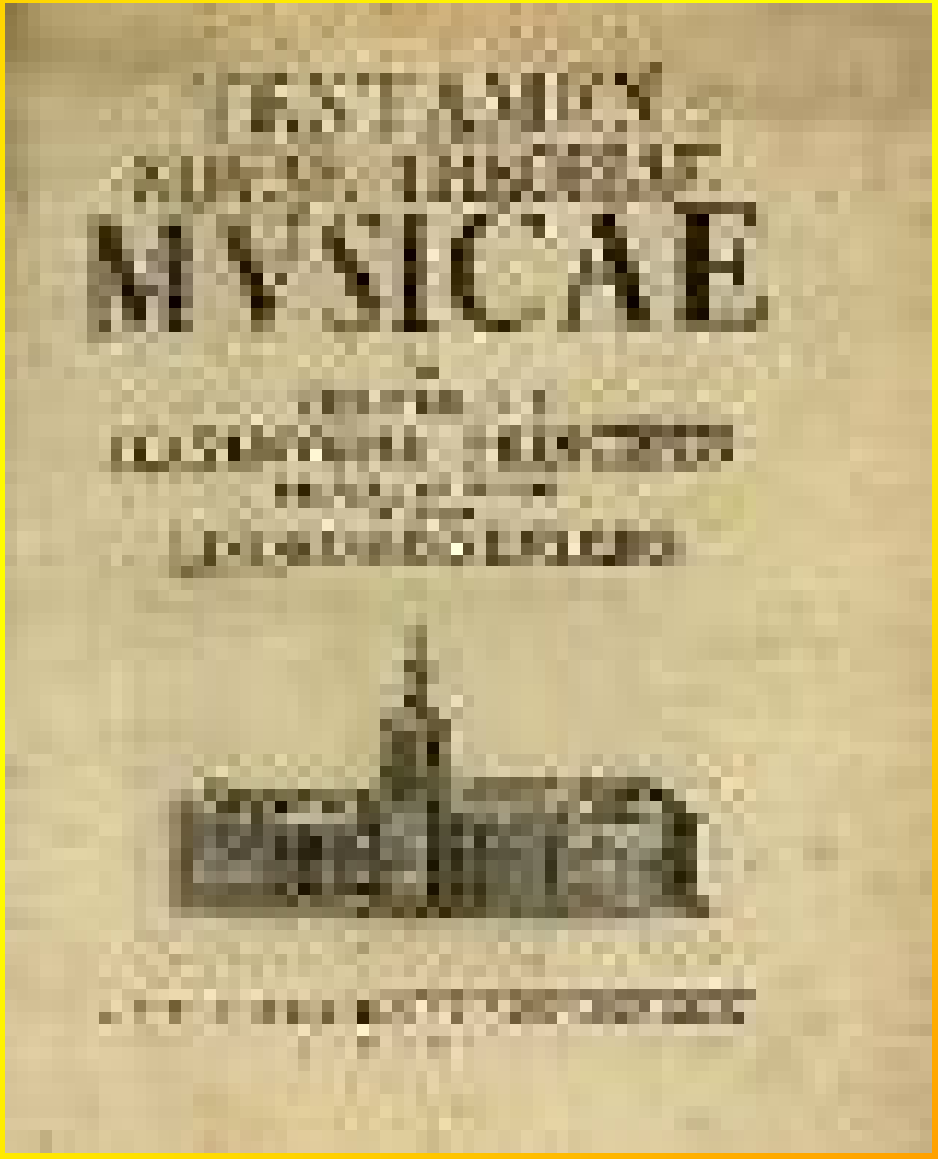

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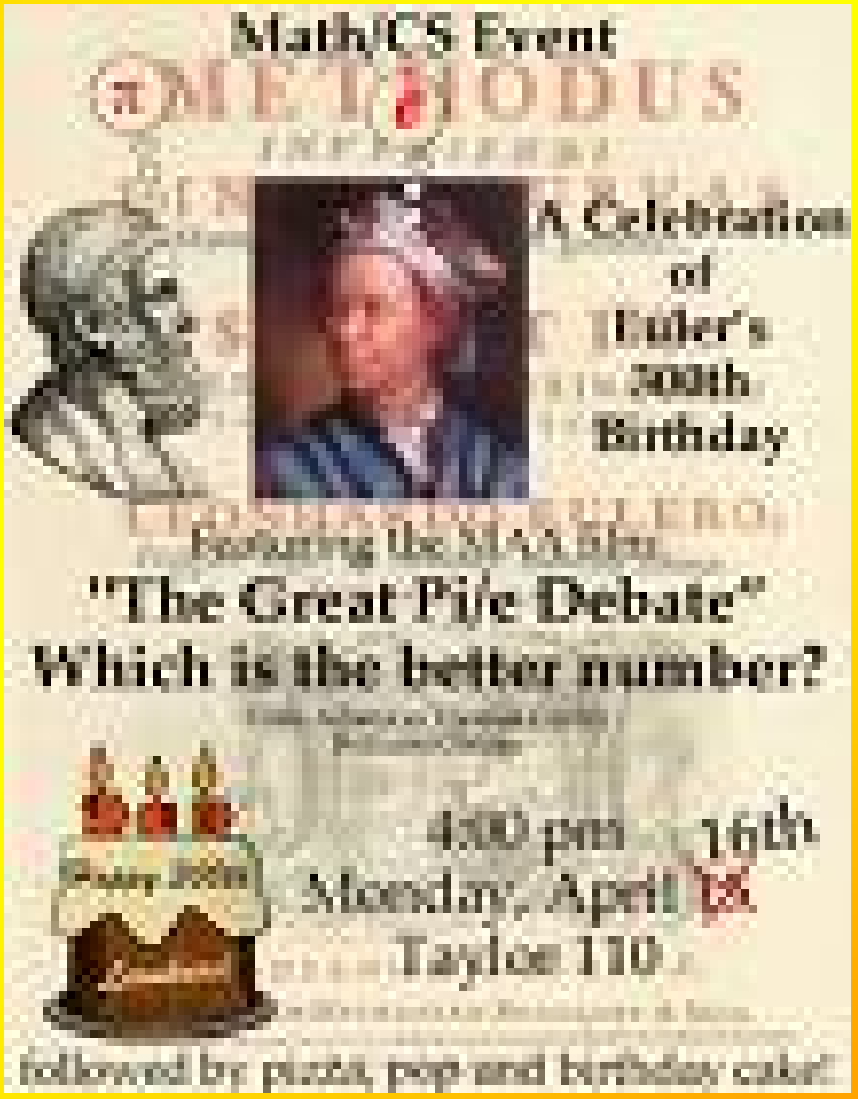

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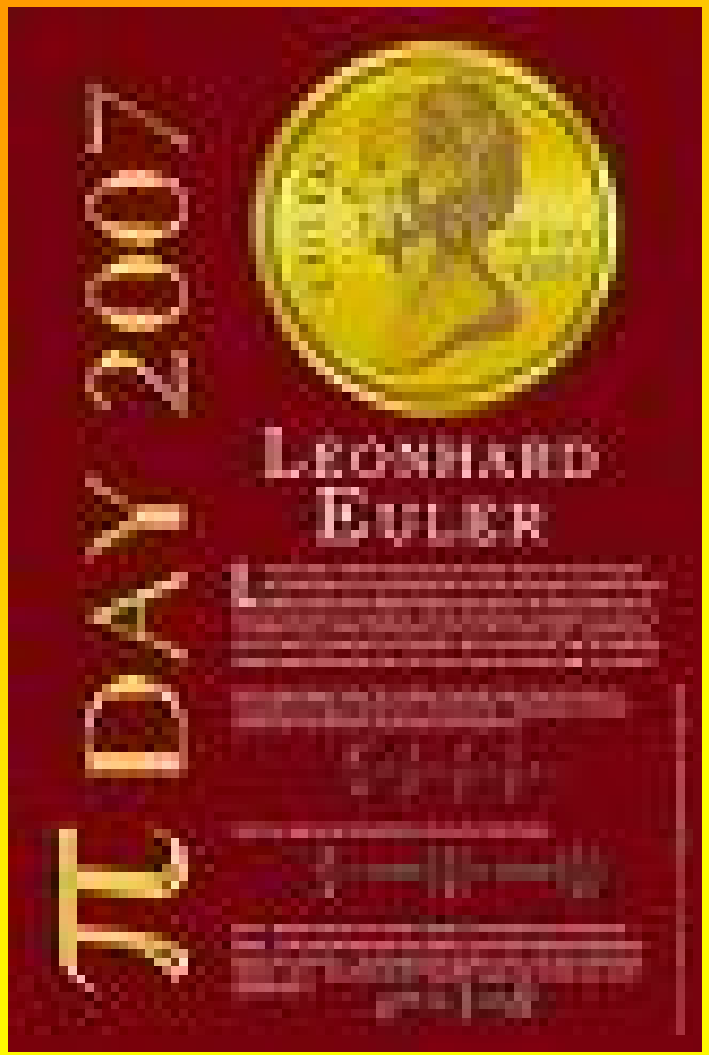

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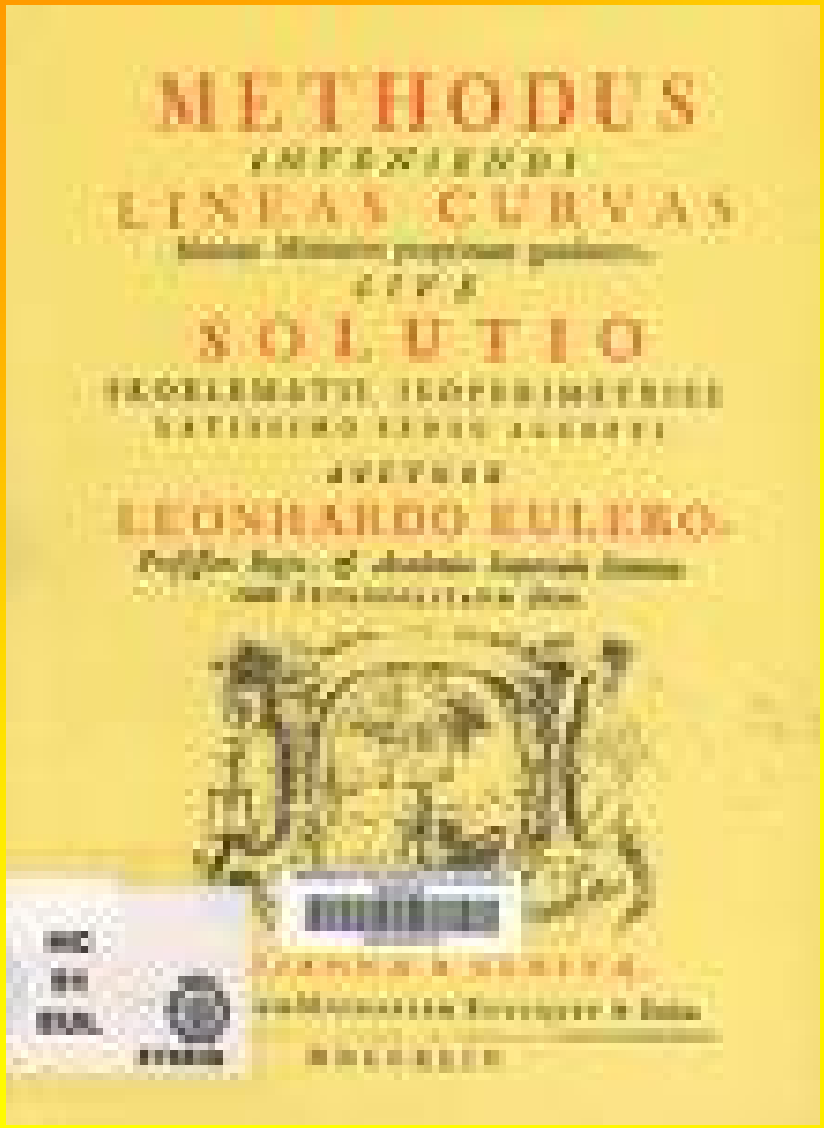
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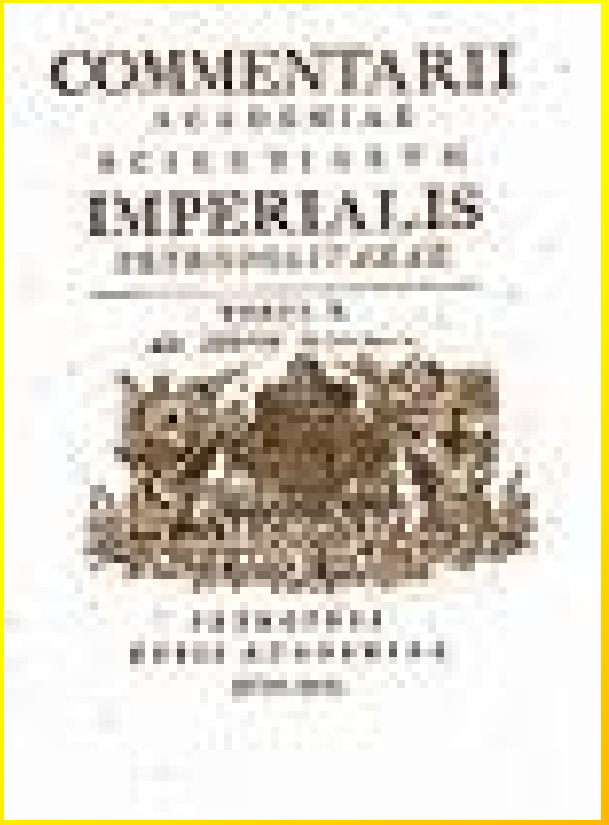
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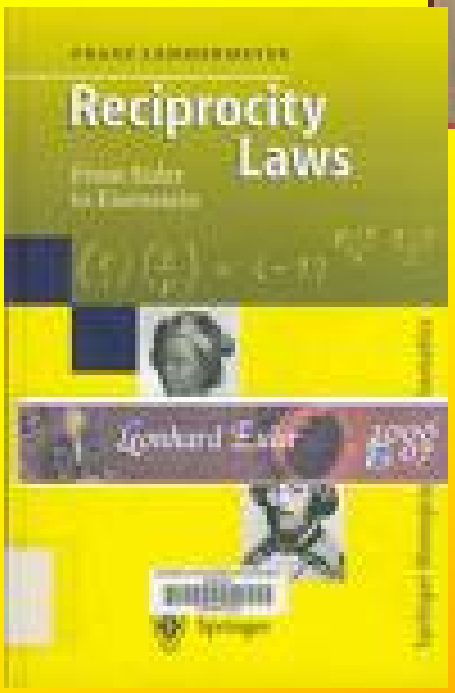

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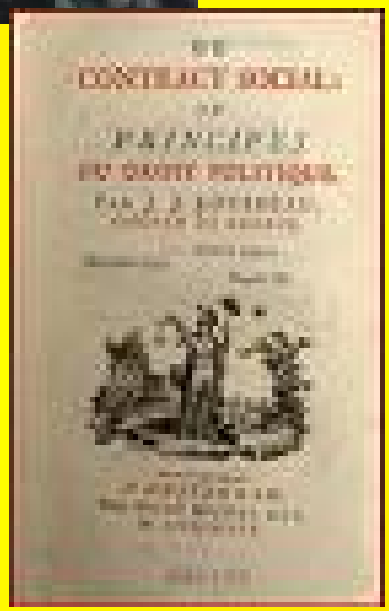

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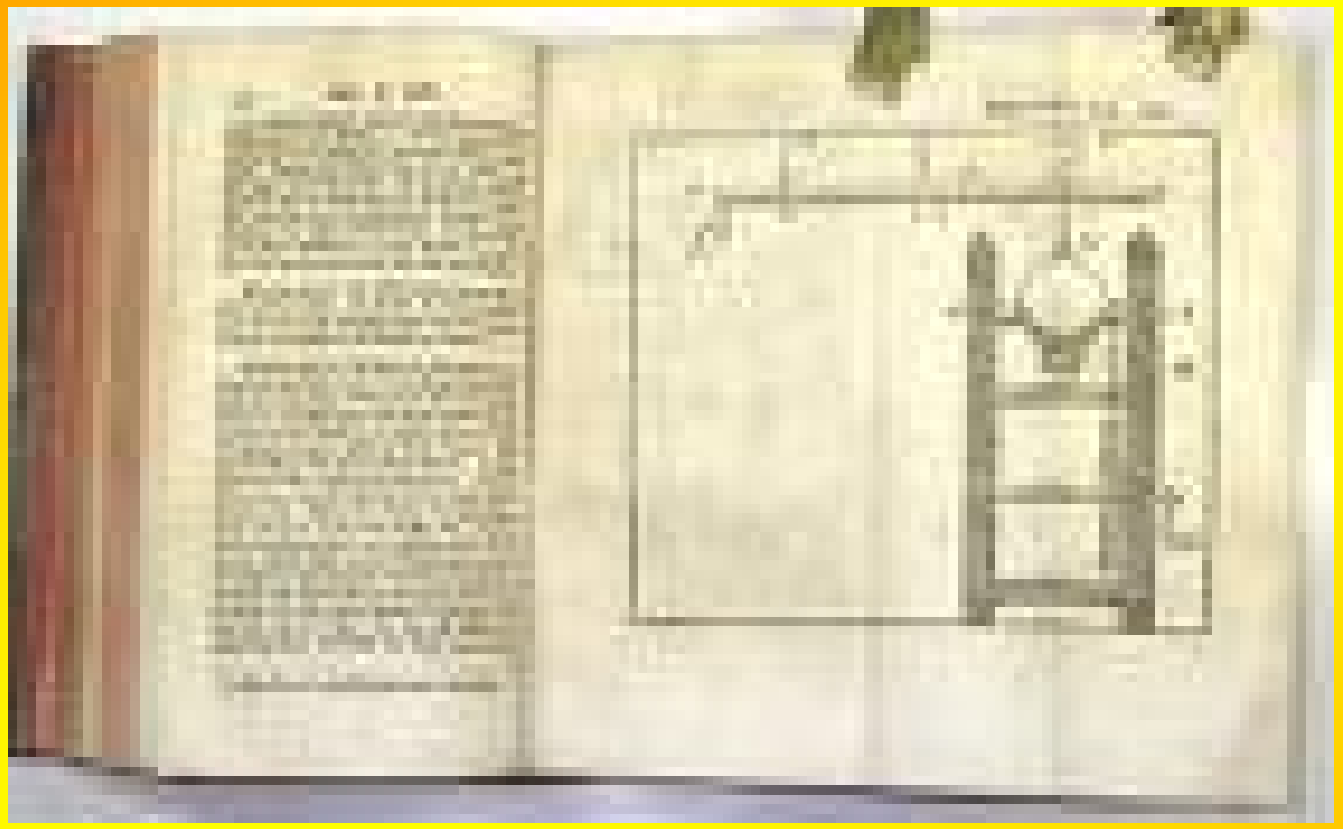

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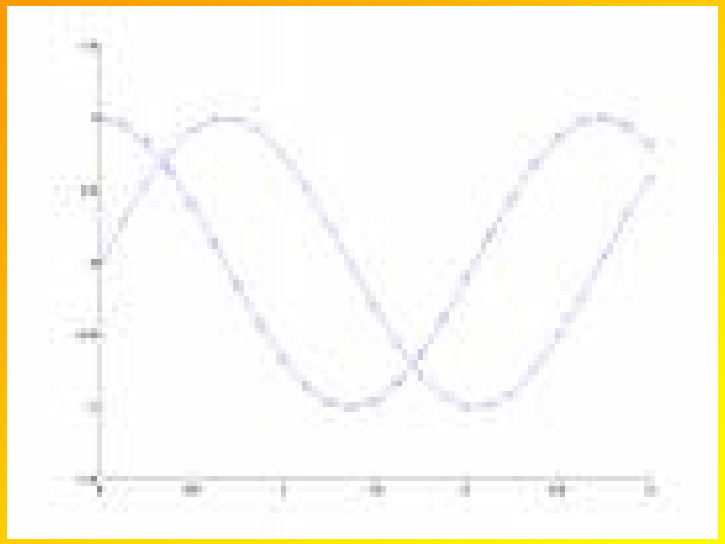

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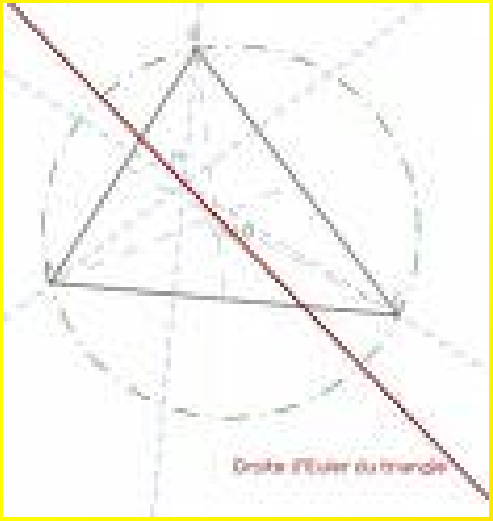

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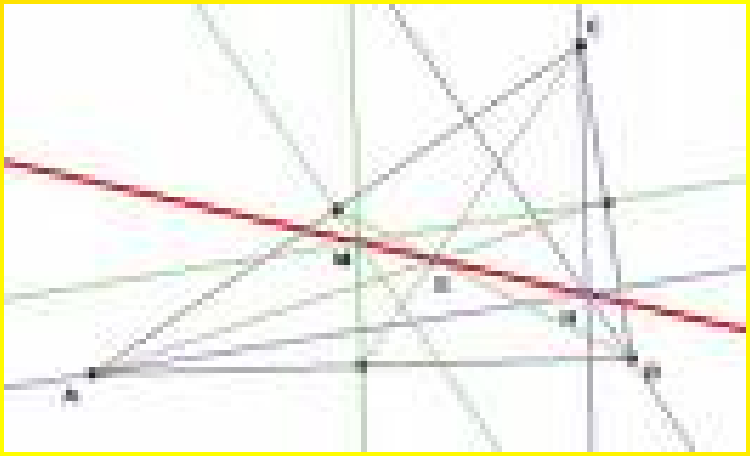

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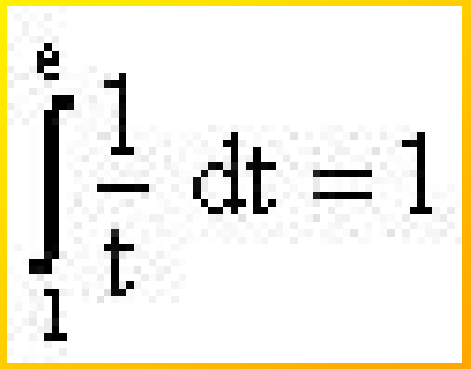

Leonhard Euler (1707 - 1783)
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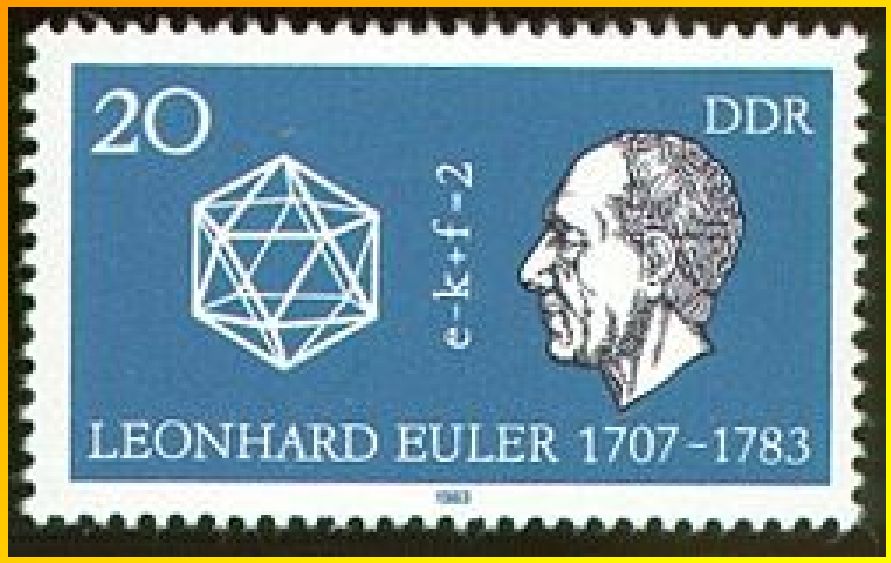
Leonhard Euler

Born	April 15, 1707 Basel, Switzerland
Died	September 18 [O.S. September 7] 1783 St Petersburg, Russia
Residence	Prussia Russia Switzerland
Nationality	Swiss
Field	Mathematics and physics
Institutions	Imperial Russian Academy of Sciences Berlin Academy
Alma mater	University of Basel
Religion	Calvinist[1]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LEONHARD EULER 1707-1783


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1707 – 1783
Почта СССР


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Selected bibliography

The cover page of Euler's *Methodus inveniendi lineas curvas*.
Euler has an extensive bibliography but his best known books include:

***Elements of Algebra*. This elementary algebra text starts with a discussion of the nature of numbers and gives a comprehensive introduction to algebra, including formulae for solutions of polynomial equations.**

***Introductio in analysin infinitorum* (1748). English translation *Introduction to Analysis of the Infinite* by John Blanton (Book I, ISBN 0-387-96824-5, Springer-Verlag 1988; Book II, ISBN 0-387-97132-7, Springer-Verlag 1989).**

Two influential textbooks on calculus: *Institutiones calculi differentialis* (1755) and *Institutiones calculi integralis* (1768–1770).
***Lettres à une Princesse d'Allemagne* (Letters to a German Princess) (1768–1772). Available online (in French). English translation, with notes, and a life of Euler, available online from Google Books: Volume 1, Volume 2**

Selected bibliography

Methodus inveniendi lineas curvas maximi minimive proprietate gaudentes, sive solutio problematis isoperimetrici latissimo sensu accepti **(1744). The Latin title translates as** ***a method for finding curved lines enjoying properties of maximum or minimum, or solution of isoperimetric problems in the broadest accepted sense.*** **[35]**

A definitive collection of Euler's works, entitled *Opera Omnia*, has been published since 1911 by the Euler Commission of the Swiss Academy of Sciences.

LEONHARD EULER

BORN: 15 APRIL 1707 IN BASEL, SWITZERLAND
DIED: 18 SEPT 1783 IN ST PETERSBURG, RUSSIA

http://www.leonhard-euler.ch/

The Opera Omnia

Published by Birkhauser and the **Euler Commission** of Switerland, the **Opera Omnia** is the definitive printed source for Euler's works. Publication began in 1911, and to date 76 volumes have been published, comprising almost all of Euler's works.

Put simply, the Opera Omnia is the authoritative source of Euler's works. Not only do his writings appear in neatly typeset, edited form, but each volume also includes commentaries, some of them very lengthy and very scholarly, on those of Euler's works in the volume.

In addition to publishing Euler's published works, the Opera Omnia has published three volumes of Euler's correspondence (see link), and has several more volumes in preparation.

Any serious Euler scholarship must take into account this invaluable resource put together by the Euler Commission. The Opera Omnia can be found in many large research libraries, and is well worth the time spent with it.

The Euler Committee of the Swiss Academy of Sciences was founded in 1907 with the task to publish all scientific books, papers and the correspondence of Leonhard Euler (1707-1783) in a scientific edition.

Euler's books and papers are edited in the Series I-III, the correspondence in the Series IV. In the last 90 years 71 volumes of the Series I-III have been published. The last three volumes are in preparation and should appear early in the next century. The Series IV with Euler's scientific correspondence will contain 10 volumes. 4 volumes have been published and three volumes are in active preparation.

This huge endeavour can only succeed with the aid of internationally acclaimed scientists as coworkers and with the financial support of the Swiss National Science Foundation, the Swiss Academy of Sciences and many long-term substantial contributions from swiss industrial corporations.

Formation and Training

1707 Born 15 April in Basel, the son of the Protestant minister Paul Euler and Margaretha Brucker.

1720 Leonhard entered Basel University, which was founded in 1460. Initially he studied theology, Oriental languages and history, but soon switched to mathematics under Johann Bernoulli (1667-1748), who became the world's most noted mathematician following the death of Isaac Newton (1643-1727). Quick to recognize Euler's mathematical genius, Bernoulli challenged him by having him read the works of the masters, and especially by instructing him personally in contemporary mathematical research.

First Petersburg period

1727 Euler's thesis titled De Sono (On Acoustics) formed the basis for his application for a post as professor of physics in Basel, but he was passed over on account of his youth. Through the help of the Bernoullis, he was offered a position in St. Petersburg at the Academy of Science, founded by Peter the Great in 1725. There he worked first as assistant professor, then from 1730 as professor and member of the academy (he had no teaching commitments, though he did write a textbook on elementary mathematics). The principal contributions of this early Petersburg period include a two-volume work on mechanics, a book on music theory and Scientia navalis (about hydrodynamics, shipbuilding and navigation), which was eventually published in 1749.

1734 At the beginning of January, Euler married Katharina Gsell, a daughter of the Swiss painter George Gsell, who was working in St. Petersburg. Euler's son Johann Albrecht was born at the end of November, the only one of his offspring to follow in his footsteps as a mathematician and member of the Academy. Only three of Euler's thirteen children would survive him. He had twenty-one grandchildren. 1738 As a result of a severe abscess, Euler lost the sight of his right eye.

Berlin years

1741 Conscious of the political turmoil in the Russian empire, Euler accepted Frederick II's offer of a professorship at the newly established Prussian Academy ("Berlin Academy") and settled with his family in Berlin. There he held a position as director of the mathematics department. Maupertuis, who in 1736 made a name for himself in a famous expedition to Lapland (the purpose of which was to determine whether the Earth was indeed an oblate spheroid) became president of the Academy, though as a scientist, he ranked far below Euler.

Berlin years -nas

. In addition to hundreds of treatises written during the Berlin period, Euler produced major works on the calculus of variations, the theory of special functions, differential equations, astronomy as well as a second masterpiece on mechanics and a popular work on physics and philosophy titled Lettres à une princesse d'Allemagne. The basic outline of his celebrated work on algebra also dates from the Berlin period. During this time, Euler maintained active connections with the Petersburg Academy, and he helped to promote interactions between the two internationally renowned academies. Euler was a member of all the important academies of his time and received many awards.

Second Petersburg period

1766 Frederick II's bumbling was influential in Euler's accepting an offer from Catherine the Great to return to St. Petersburg, where he remained until his death.

1771 In the aftermath of a failed cataract operation, Euler lost the sight of his remaining good eye and soon became nearly totally blind. During the great St. Petersburg fire, he was barely saved from his burning house by the Basler artisan Peter Grimm. Yet, amazingly, his productivity increased: approximately half of his prodigious output occurred during this second Petersburg period, including three-volume works on integral calculus and optics (Institutiones calculi integralis and Dioptrica) as well as the authoritative version of his work on algebra.

1773 Following the death of his wife Katherina, in 1776 Euler married her half-sister Abigail Gsell.

1783 On 18 September Euler suffered a stroke and died quickly and painlessly.

57 results **"Opera Omnia"** in the category Books and CD-ROMs

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The "Euler phenomenon"

Three factors go a long way to explaining the "Euler phenomenon": First of all, his - perhaps uniquely - gifted memory. Whatever Euler heard, saw, thought, or wrote he seems to have remembered his whole life long, as countless of his contemporaries would attest. So it is, for example, that at an advanced age he was able to delight his relatives, friends, and acquaintances with a literal (Latin) recitation of any song from Virgil's Aeneis, and that he could recall by heart minutes of academy meetings decades later, to say nothing of his memory for mathematical things. Second, Euler's prodigious memory went hand in hand with a rare ability to concentrate. Noise and bustle in his immediate environment hardly disturbed his thinking: "A child on his knees, a cat on his back - this is how he wrote his immortal works," reported Thiébault, his colleague from the Berlin academy. The third factor in the "Euler mystery" is, quite simply, constant, calm work.

Reputation

Leonhard Euler's influence and reputation were already impressive during his lifetime. He was (according to Andreas Speiser) for roughly two decades the intellectual leader of the Protestant part of Germany, and (according to Eduard Winter) he performed inestimable services as the "golden bridge between two academies". The 10 volumes of his correspondence testify to this role, as does the fact that, during his Berlin years, Euler published 109 papers in the Petersburger Kommentare as opposed to the 119 he published in the Mémoires of the Berlin academy. And although Euler's energy was sufficient for him to keep up his activities at both institutions, the institutions themselves could not easily cope with the almost inexhaustible tide of Euler's productivity. To judge simply from the extent of his work, Euler is in the company of the most prolific members of the human race, for instance, Voltaire, Leibniz, Telemann or Goethe. The directory of Euler's writings published by G. Enestrom (1910-1913) takes up an entire volume and lists almost 900 titles, among them some 40 books.

Productivity

The following table summarizes the extent of Euler's writings specified by him as ready for publication, arranged according to decades (not included are a few dozen works that have not yet been dated):

Year	Works	%
1725–1734	35	5
1735–1744	50	10
1745–1754	150	19
1755–1764	110	14
1765–1774	145	18
1775–1783	270	34

Technical range

With respect to technical discipline, the writings break down approximately as follows:

Algebra, number theory, analysis 40%

Mechanics and other physics 28%

Geometry, including trigonometry 18%

Astronomy 11%

Ship theory, artillery, architecture 2%

Philosophy, music theory, theology, and anything else not included above 1%

The distribution of Euler's purely mathematical works is approximately as follows:

Algebra, combinatorics, and probability theory 10%

Number theory 13%

Fundamental analysis and differential calculus 7%

Infinite series 13%

Integral calculus 20%

Differential equations 13%

Calculus of variations 7%

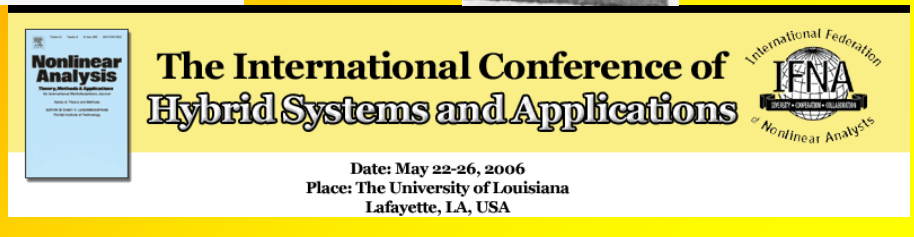
Geometry, including differential geometry 17%

Prizes

Altogether Leonhard Euler won 12 international academy prizes, not counting the prizes of his sons Johann Albrecht (7) and Karl (1), which can essentially also be credited to Euler's account. The Frenchman King Louis XVI awarded Euler 1000 rubles for his "second ship theory", and the Russian empress Katharina II gave him double that amount so that the blind doyen of Petersburg could collect a supplementary salary in 1773.

Influence

On the subject of Euler the judgment of the most important mathematicians is unanimous. Laplace used to say to his students: "Read Euler, read Euler! He is the master of us all!" and Gauss explained emphatically: "The study of Euler's works remains the best instruction in the various areas of mathematics and can be replaced by no other." Indeed, through his books, which are consistently characterized by the highest striving for clarity and simplicity and which represent the first actual textbooks in the modern sense, Euler became the premier teacher of Europe not only of his time but well into the 19th century.



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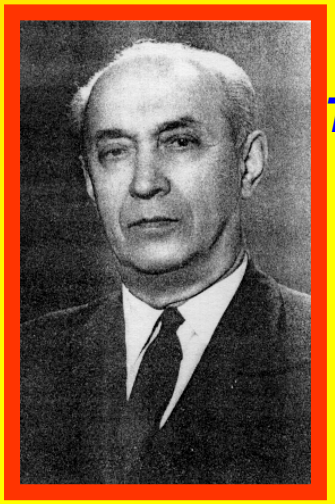

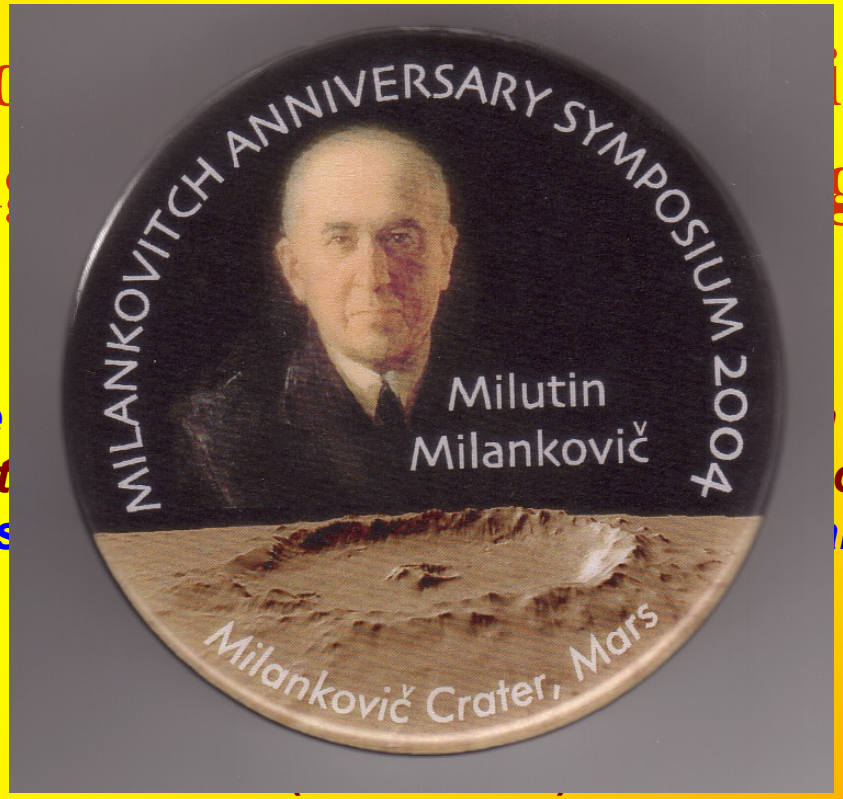

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