

**Memories about
Alexander Petrovich Chetverikov
who passed away
on 07 December 2022
Alex will ever be with us.**

**Alexander Petrovich was born
13.06.1953 as a son of Volga
town Saratov, where he grew up
and studied physics and nonlinear
dynamics**



at Saratov State University and finished at the chair of Prof. Dmitrii I. Trubetskov, who headed the chair of electronics and wave processes, Faculty of Nonlinear Processes, Saratov State University Saratov Astrakhanskaya.

Prof. D.I. Trubetskov was a well-known expert, served as Rector of the University, corresponding member of the Russian Academy of Sciences, author of many known books as e.g. Oscillations and Waves: in Linear and Nonlinear Systems with M. Rabinovich. Prof. Trubetskov may be considered as one of the founders of the tradition of nonlinear physics in Saratov

1990th the first publications of Alexander appeared

A.P. Chetverikov, Izv. Vus. AND Vol. 2 iss 5 (1994) Nonlinear dynamical systems of meeting electromagnetic waves with cubic nonlinearity

D. I. Trubetskov, A.P. Chetverikov, Izv. Vus. AND Vol. 2 iss 5 (1994) Selfexcited waves in distributed systems of electromagnetic waves meeting electron streams.

Alexander promoted at the Saratov University, defended the thesis of a candidate and later of a doctor of science

In the late **90th** A.C spent about one year supported from DAAD -at

Humboldt University Berlin working with Werner Ebeling and his group. He developed a close collaboration and friendship lasting up to the end of his life.

A. Chetverikov, W. Ebeling, M. Jenssen:

Statistical Thermodynamics and Nolinear Excitations in Toda Systems,

Ukrain. J. Phys. 45, 479 (2000).



In the **90th** A.C spent about one year supported from DAAD -at

Humboldt University Berlin working with Werner Ebeling and his group. He developed a close collaboration, met Yuri Romnovsky, Shura Neiman, hold friendship lasting up to the end of his life.

A. Chetverikov, W. Ebeling, M. Jenssen:

Statistical Thermodynamics and Nolinear Excitations in Toda Systems,

Ukrain. J. Phys. 45, 479 (2000).



1999 back to SSU Saratov:

In Saratov he worked as docent at Faculty of Nonlinear Processes and then as professor at the chair Autowave Processes headed by Vadim S. Anishchenko:

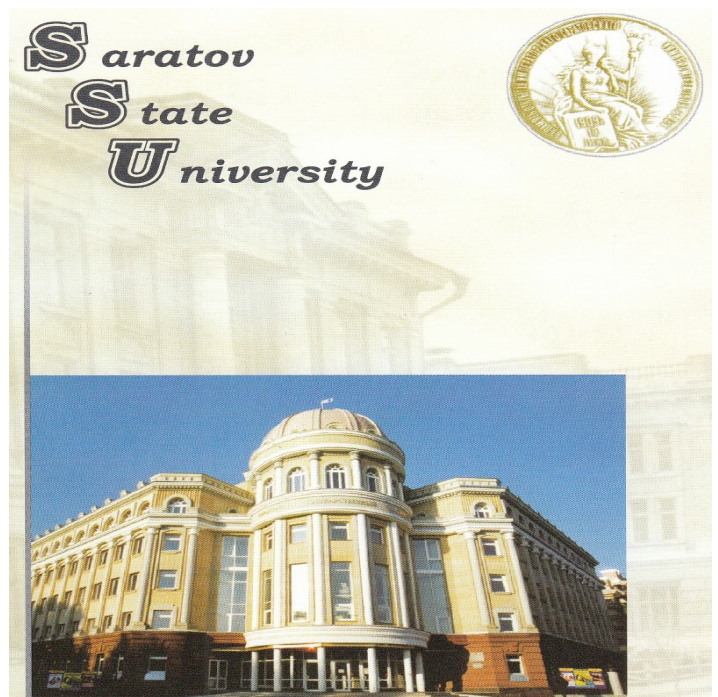
Seminars at Saratov State University

Ezequiel Del Rio, Prof. Vadim Anishchenko, Doc. Galina Strelkova



Seminar at SSU from left A.P.C., a spanish guest, friend and coauthor
Dr. Ezequiel Del Rio

Back to the Volga:





Alexander Petrovich with Werner Ebeling at the Wolga river near Saratov during the Conference on Nonlinear Processes 2014

Since 2002 **Madrid** regular invitations to visits of the
Universidad Madrid Universidad Autonoma,
Prof. Manuel Velarde **Instituto Pluridisciplinar in Madrid**





2004 April Madrid: On the r.h.s. Pilar and Manuel Velarde, Alex, on the l.h.s. Werner Ebeling, Vadim Anishchenko and Barbara Ebeling

The first of a long series of common papers with Prof. Manuel Velarde and his group at Instituto Pluridisciplinar appeared:

M.G. Velarde et al, Int. J. Bifurcation Chaos **15, 245 (2005).**

A.P.C. developed extended common work with the large group formed by Manuel Velarde.

A.P. Chetverikov, W. Ebeling, M.G. Velarde, Eur. Phys. J. B **44, 509 (2005)**

A.P. Chetverikov, W. Ebeling, M.G. Velarde, Eur. Phys. J. B **1, 87 (2006)**

A.P. Chetverikov, W. Ebeling, G. Röpke, M.G. Velarde, Contr. Plasma Phys. **51**, 87 (2006)

A.P. Chetverikov, W. Ebeling, M.G. Velarde, Int. J. Bifurcation Chaos **16**, 1613 (2006)

A.P. Chetverikov et al, Contr. Plasma Phys. **45**, 275 (2005).

M.G. Velarde et al, Int. J. Bifurcation & Chaos **16**, 1035 (2006).

A.P. Chetverikov et al, Eur. Phys. J. B **44**, 509 (2005).

A.P. Chetverikov et al, Eur. Phys. J. B **51**, 87 (2006).

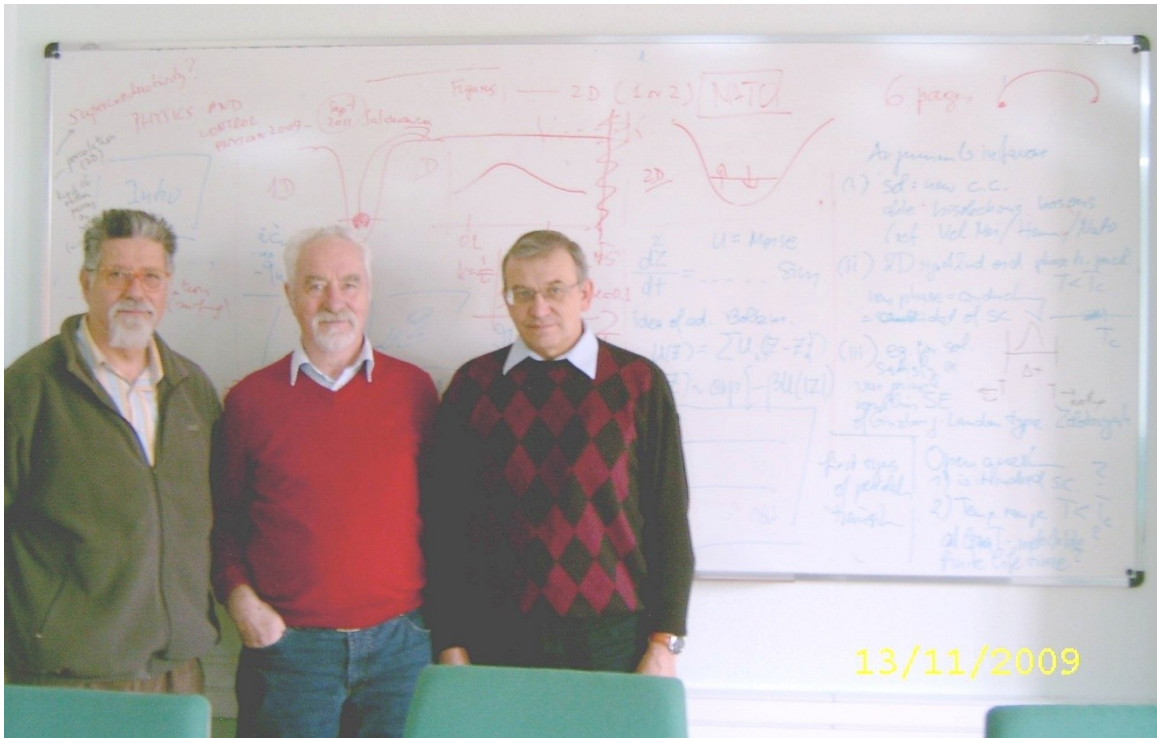
D. Hennig et al, Phys. Rev. B **73**, 024306 (2006).

A.P. Chetverikov et al., Int. J. Bifurcation & Chaos **16**, 1613 (2006).

Between 2005 and 2020 appeared more than 20 paper partly in high-ranked scientific journals



2004 April Madrid



2009 November Madrid

Seminar at Pluridisciplinar November 2009 Madrid. Ladies in the centre:
Leonor Cruzeiro and O.G.Cantu Ros.

On the possibility of electric transport mediated by long living
intrinsic localized solectron modes

O.G. Cantu Ros¹, L. Cruzeiro^{1,2}, M. G. Velarde¹, and W. Ebeling¹,
appeared in Euro. Phys. J. 2011

Trip by bus to Toledo
wonderful knives !!!



2009 in July, trip to Italy.

Visit of University Pescara Italy developing a collaboration

and L'Aquila after earthquake



2009 L'Aquila, W. Ebeling and P. Velarde meet local people bringing as gift a big spanish jamon.



2009 July L'Aquila , Italy: Ceremony of handing out the Spanish Jamon as gift to the people of L'Aquila suffering from a big earthquake!

The whole group visits together Granada 2011



New papers: Anharmonicity and Soliton-Mediated

Transport: Thermal Solitons, Solelectrons

and Electric Transport in Nonlinear

Conducting Lattices

W. Ebeling, M.G. Velarde, A.P. Chetverikov, and D. Hennig

**Models of Electron Transfer along a Covalent Bridge
Donor-Acceptor Based on the Riding on Solitons**

(for discussion April – July 2009)

Alexander P. Chetverikov*, Werner Ebeling**,

Dirk Hennig**, John J. Kozak***, and Manuel G. Velarde*

Next meeting occurs in summer 2011 in Saratov



Friends at central place in town in Saratov



2011 Saratov



2011 June Evening dinner in a restaurant in Saratov: From left: Alex' wife, Yuri Romanovsky, Vadim Anishchenko with his wife Tania, Werner Ebeling and Manuel Velarde.

Next Meeting June 2012 in Madrid

June 2012 near entrance of Instituto Pluridisciplinar



2012 June Madrid: Ladies in first row: Maria Jesus, chef secretary of Manuel's office, left to her Ljudmila Brizhik and right Leonor Cruzeiro, in the back between Manuel and Werner, a visitor from Pushchino Victor Lakhno, another friend and frequent coauthor of Alex

Discrete-breather-assisted charge transport along DNA-like molecular wires

A. P. Chetverikov, W. Ebeling, **V. D. Lakhno**, and M. G. Velarde

On the possibility of electric transport mediated by long living intrinsic localized soliton modes

O.G. Cantu Ros , L. Cruzeiro , M.G. Velarde and W. Ebeling

2012 April Madrid: Alex and Barbara study the newest work in CPP



Meeting April 2013 in Berlin at lake Wilhelmsruh

2013 April
Berlin: Group
foto near to
the house of
the of the
Ebeling's



meeting Gerd
Röpke and Shura Neiman

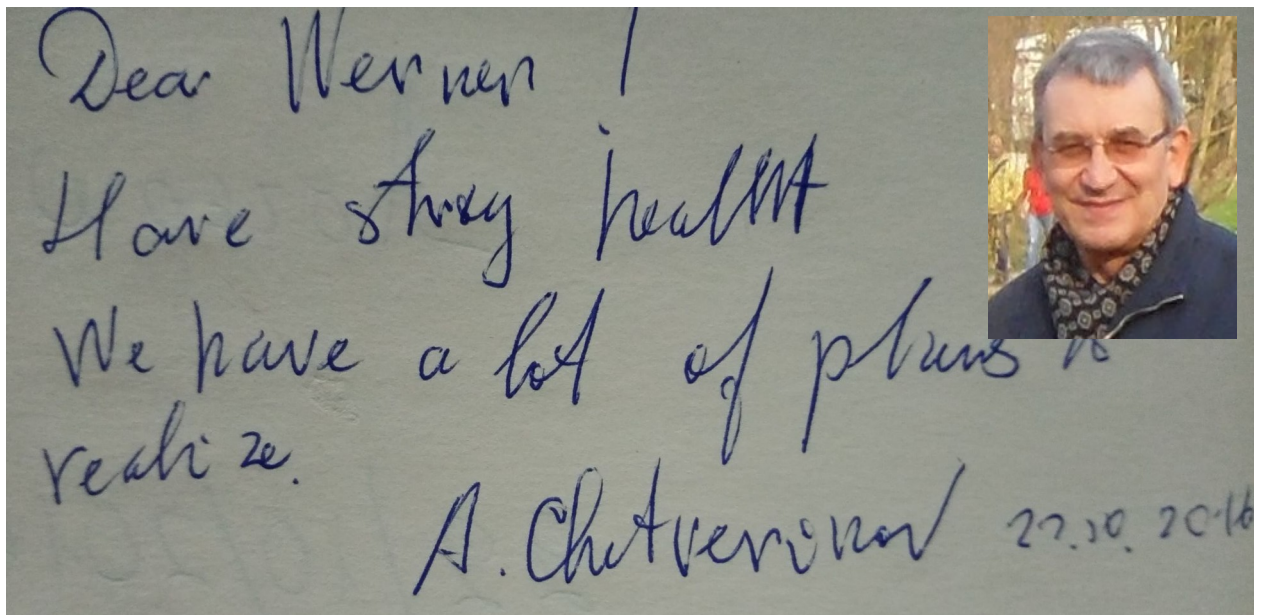


Meeting April 2015 in
Madrid with Wilson and Launay



2015 April Madrid from left: W.E., Wilson, Launay, A.P.C., M.G.V.

Greetings sent from Russia 2016 to Werner's 80th birthday



Alex was always full of plans:

„We have a lot of plans to realize „

We list only a few of his last projects including

Victor Lakhno (RAS Pushchino), Ekkehard Schöll (TU Berlin), Sergej Dmitriev & Elena Korznikova (RAS Ufa), Ezequiel del Rio (U Politecnica Madrid), Konstantin Sergeev (SSU Saratov) and others:

Alex left many plans and unfinished books !!

Examples of last projects and papers:!

Nonlinear excitations and bound states of electrons, holes and solitons in bilayers of triangular lattices?

Alexander P. Chetverikov^{1,2}, Werner Ebeling³, **Ekkehard Schöll**^{4,a},

and Manuel G. Velarde¹

¹ Instituto Pluridisciplinar, Universidad Complutense, Paseo Juan XXIII, 1, Madrid 28040, Spain

² Department of Physics, Saratov State University, Astrakhanskaya 83, Saratov 410012, Russia

³ Institute of Physics, Humboldt-University Berlin, Newtonstr. 15, Berlin 12489, Germany

⁴ Institute of Theoretical Physics, Technische Universität Berlin, Hardenbergstr. 36, Berlin 10623, Germany

LOCALIZED LUMP-SOLITON-LIKE EXCITATIONS IN TRIANGULAR MORSE LATTICES

A.P. Chetverikov¹, S.V. Dmitriev², W. Ebeling³, E.A. Korznikova^{2*}, M.G. Velarde⁴

¹ Saratov National Research State University, 83 Astrakhanskaya Street, Saratov, 410012, Russia

² Institute for Metals Superplasticity Problems RAS, Khalturin St. 39, 450001 Ufa, Russia

³ Humboldt-University Berlin, Newtonstraße 15, D-12489 Berlin, Germany

⁴ Instituto Pluridisciplinar, Universidad Complutense, Paseo Juan XXIII, 1, 28040 Madrid, Spain

A few salient features of dissipative solitons in crystal lattices of active units

A. P. Chetverikov^{1,2, 5}, W. Ebeling, E. del Rio, K. S. Sergeev, M. G. Velarde⁵

1. Chernyshevsky National Research State University, Astrakhanskaya Str., 83, Saratov-410012 (Russia)[chetverikovap@info.sgu.ru][ksergeev@mail.ru]

2. Institute of Mathematical Problems of Biology RAS -Branch of Keldysh Institute of Applied Mathematics, Russian Academy of Sciences, Prof. Vitkevich Str.,1, Pushchino, Moscow Region-142290 (Russia)

3. Institut für Physik, Humboldt-Universität Berlin, Invalidenstraße 110, Berlin-10178 (Germany) [woebel@email.de]

4. Dpto. Física Aplicada, ETSI Aeronautica y del Espacio, Universidad Politécnica Madrid, Plaza Cardenal Cisneros, 3, Madrid-28040 (Spain) [ezequiel.delrio@upm.es]

5. Instituto Pluridisciplinar, Universidad Complutense Madrid, Paseo Juan XXIII, 1, Madrid-28040

2018: Scenarios of mass transfer in fcc copper: the role of point defects

A M Bayazitov¹, E A Korznikova², I A Shepelev³, A P Chetverikov³,

S Kh Khadiullin⁴, E A Sharapov⁴, P V Zakharov⁵, S V Dmitriev^{2,6}

¹ Bashkir State University, 32 Zaki Validi st., 450000 Ufa, Russia

² Institute for Metals Superplasticity Problems of RAS, 39 Stepan Khalturin st., 450001 Ufa, Russia

³ Saratov Chernyshevsky State University, 83 Astrakhanskaya st., 410012 Saratov, Russia

⁴ Ufa State Aviation Technical University, 12 K. Marx st., 450008 Ufa, Russia

⁵ Altai State Humanitarian and Pedagogical University, 53 Korolenko st., 659333 Biysk, Russia

⁶ National Research Tomsk State University, 36 Lenin Ave., 634050 Tomsk, Russia

Article in Entropy (2022):

Long-Range Electron Transport Donor-Acceptor in Nonlinear Lattices

Alexander P. Chetverikov ^{1,†}, Werner Ebeling ^{2,†} and Manuel G. Velarde ^{3,*},†

Excitation of solitons in hexagonal lattices and ways of controlling electron transport

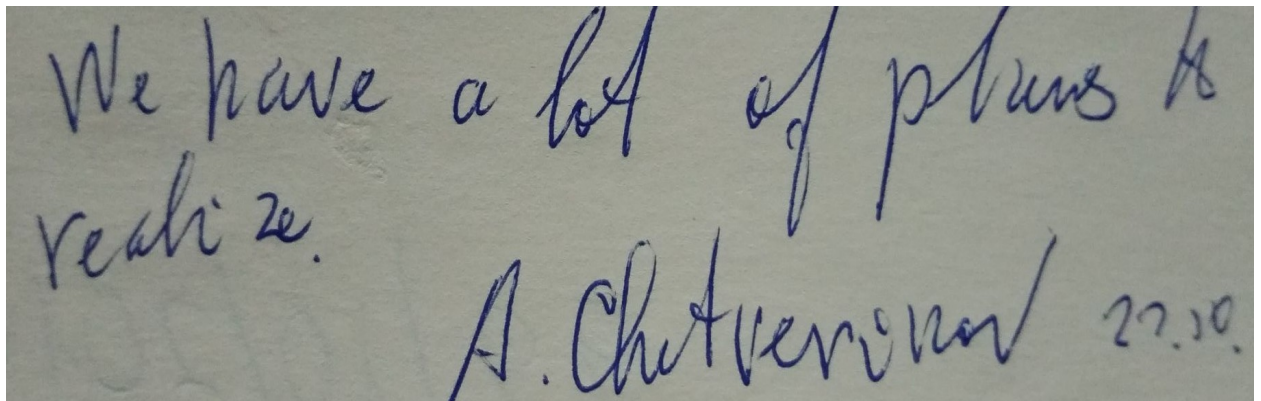
A. P. Chetverikov¹ · W. Ebeling² · E. Schöll³ · M. G. Velarde⁴

Nonlinear Dyn (2020) 102:1813–1823

Dissipative discrete breathers in a chain of Rayleigh oscillators

K. S. Sergeev · A. P. Chetverikov · E. del Rio

What Alex left to us are several projects and unfinished books on solitons:



We will never forget him,
he was the driving force
in our collaboration !



Sorry, that we had to leave the
chance to meet his 70th
birthday on 13.06.2023 and
honor our Alex by a big party!

