# In Memoriam: J. Zimányi
# (1931 – 2006)

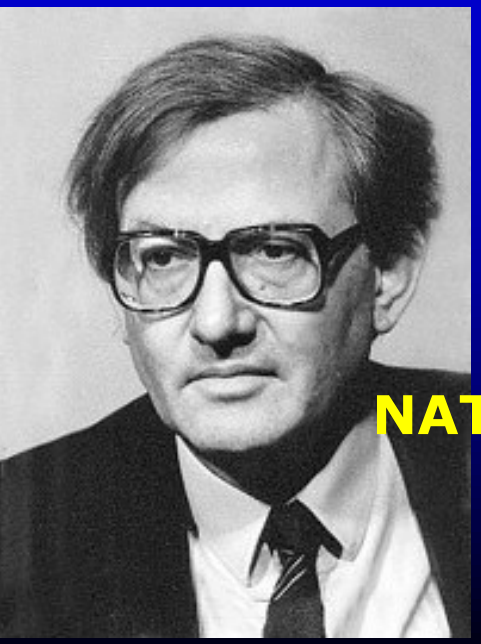
Tamás Csörgő [1,2]

[1]HUN-REN Wigner FK (KFKI Campus), Budapest, and
[2] MATE Institute of Technology,RC, Gyöngyös, Hungary

**Motivation: 25th edition of the Zimányi Schools**

L. Kiss (Berze)
J. Németh(Eötvös)
B. Lörstad (Lund)
W. Kittel (Nijmegen)
S. Nagamiya (Columbia/KEK)
V.N. Gribov (Leningrad/Budapest),
R. J. Glauber (Harvard)
L. Jenkovszky (Kiev)
W. A. Zajc (Columbia)

# HIGHLIGHTS FROM CV OF TAMÁS



* IN GYÖNGYÖS, HUNGARY

PRIMARY SCHOOL IN VISZNEK, HUNGARY

SECONDARY SCHOOL IN BERZE, GYÖNGYÖS, HUNGARY

M. SC: EÖTVÖS UNIVERSITY, BUDAPEST, HUNGARY

PH.D (CANDIDATE OF SCIENCE) (1987-1990):
AT KFKI, HAS, BUDAPEST, HUNGARY,

GO WEST FELLOWSHIP, EU (1994):
AT UNI. LUND, LUND, SWEDEN

FULBRIGHT ADVANCED RESEARCH (1996-97):
AT COLUMBIA UNIVERSITY, NY, USA

NATO VISITING PROFESSOR (2001-2002):
UNI. NIJMEGEN, NIJMEGEN, THE NETHERLANDS

FULBRIGHT ALUMNI INITIATIVES (2001-2002):
AT COLUMBIA UNIVERSITY AND BNL, NY, USA

NATO COLLAB LINK GRANT (2002-3) KYIV, COLUMBIA, KFKI, UKRAINE

HAESF SENIOR LEADERS AND SCHOLARS (2008-2009):
AT HARVARD, CAMBRIDGE, MA, USA

# IN MEMORIAM … LAJOS BÁCSI

*** 1939, KISÚJSZÁLLÁS**

**† 1995, GYÖNGYÖS**

**ARS POETICA AS A TEACHER:**

***„THE MIND OF A STUDENT IS NOT LIKE A VESSEL, TO BE FILLED, BUT LIKE A TORCH, THAT CAN BE REKINDLED”***

**IN A FREE STYLE, AFTER PLUTARCH**

**CIRCLE OF LITTLE PHYSICISTS:**

***„AMONG MEDIOCRES, IT IS EASY TO BE OUTSTANDING: THE REAL CHALLENGE IS TO BE OUTSTANDING AMONG OTHER OUTSTANDING PEOPLE”***

**BERZE CLUB OF SCIENCE:**

***„TRUST, LOVE, WORK, CONTROL AND EXAMPLE”***

**BERZE CLUB OF SCIENCE, RE-ORGANIZED**
**UNITY OF NATURE → BUGÁT PÁL COMPETITIONS**
**MIKOLA PHYSICS COMPETITION, SECONDARY SCHOOL**

# IN MEMORIAM … JUDIT NÉMETH

**Németh Judit** asszonynevén *Dörnyei Józsefné*[3] (Budapest, 1932. október 15. – Budapest, 2019. január 15.)[1][4] magyar fizikus, egyetemi tanár, professor emerita, 1998-tól a Magyar Tudományos Akadémia levelező, 2004-től rendes tagja, a fizikai tudományok kandidátusa (1965), majd doktora (1972). Az Eötvös Loránd Fizikai Társulat elnöki, majd alelnöki tisztét is betöltötte. A hazai nehézion-fizikai kutatások egyik iskolateremtő megalapítója.[5]

**M.SC. SUPERVISOR: EÖTVÖS UNIVERSITY, PHYSICS (1982-87)**
**EXAMPLARY HUMAN STAND**
**1956, UNITING FAMILY AND WORK DUTIES**
**CULTIVATING THE CULT OF HER FATHER, LÁSZLÓ NÉMETH**

IAEA International Atomic Energy Agency — Atoms for Peace and Development

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Published November 30, 1988 | Version v1

Journal article | Metadata-only

## Viscosity from a three-component fluid model of heavy ion reactions

Nemeth, J.[1]; Csoergoe, T.[1]; Ngo, C.[2]

Show affiliations

In different energy domains the collision of two heavy nuclei has to be described with different models. A three-component fluid model is introduced for heavy ion reactions to determine the viscosity term and the entropy production of the process. The entropy production turns out to be connected with the modified two-nucleon scattering cross section, while the viscosity coefficient is related only to the densities and to the velocity gradients, as in ordinary hydrodynamics. (author) 6 refs

**Contact**

Inquire about this record

**Details**

**Resource type**
Journal article

**Published in**
Acta Physica Hungarica, 64(1-3), 237-245, ISSN: 0231-4428, 1988.

# IN MEMORIAM … ZIMÁNYI „JOZSÓ” JÓZSEF

**MY CAND. SCI. (PH.D) SUPERVISOR:**
**TMB FELLOWSHIP, MTA KFKI (1987-90)**
**EXEMPLARY HUMA STAND**

**ZIMÁNYI PRINCIPLE IN SCIENTOMETRY:**
**- SCIENTOMETRIC DATA NEEDED**
**- HUMAN EXPERTS ARE ALSO NEEDED**
**- THUS *NO ALGORITHM CAN TELL*,**
**WHO IS A GOOD SCIENTIST**

**A SPECIAL CASE OF GOODHART'S LAW**

**ZIMÁNYI SCHOOLS IN KFKI/WIGNER (2001-)**
**HTTPS://ZIMANYISCHOOL.KFKI.HU/**

**Zimányi József** (Budapest, 1931. december 5. – Budapest, 2006. szeptember 26.) Széchenyi-díjas magyar fizikus, a Magyar Tudományos Akadémia rendes tagja. A magyarországi magfizika és nagyenergiájú fizika egyik úttörője, Zimányi Magdolna férje.

https://hu.wikipedia.org/wiki/Zim%C3%A1nyi_J%C3%B3zsef_(fizikus)

# ZIMÁNYI – BONDORF – GARPMAN (ZBG) SOLUTION

## AND ITS GENERALIZATION BY DE ET AL

A Simple Analytic Hydrodynamic Model for Expanding Fireballs

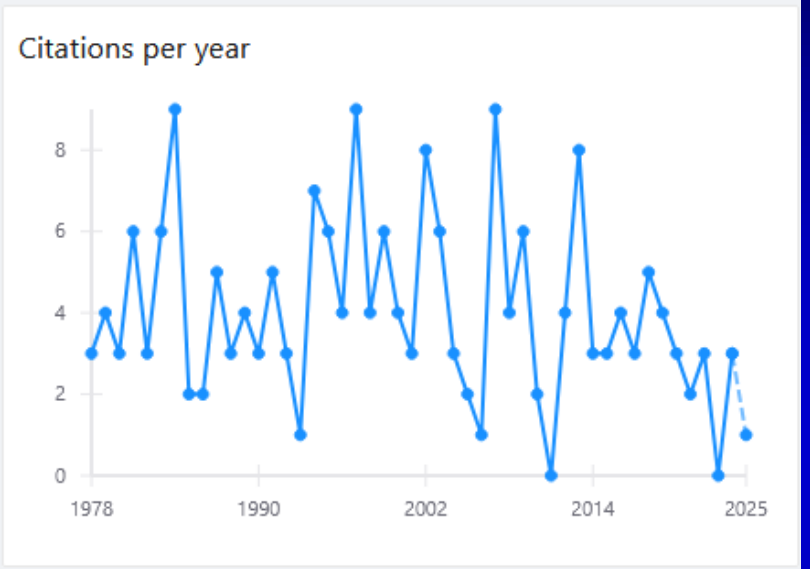
J.P. Bondorf (Bohr Inst.), S.I.A. Garpman (Nordita), J. Zimanyi (Budapest, RMKI)
1978

13 pages
Published in: *Nucl.Phys.A* 296 (1978) 320-332
Published: 1978
DOI: 10.1016/0375-9474(78)90076-3

The rarefaction of oblate shaped nuclear matter in heavy-ion collisions #2
J.N. De, S.I.A. Garpman, D. Sperber, J.P. Bondorf, J. Zimànyi (1978)
Published in: *Nucl.Phys.A* 305 (1978) 226-244

DOI cite claim reference search 14 citations

cite claim reference search 192 citations




**ANALYTIC, EXPLICITE, EXACT AND *FINITE* SOLUTION OF FIREBALL HYDDRODYNAMICS**
**NON-RELATIVISTIC AND SPHERICALLY SYMMETRIC**
**FREEZE-OUT CRITERIA FROM COSMOLOGY**
**GENERALIZED TO ELLIPSOIDAL SYMMETRY BY ZIMÁNYI ET AL**

$$H = \frac{1}{2m}\left(P_x^2 + P_y^2 + P_z^2\right) + \kappa T_i \left(\frac{X_0 Y_0 Z_0}{XYZ}\right)^{1/\kappa},$$

$$X\ddot{X} = Y\ddot{Y} = Z\ddot{Z} = \frac{T_i}{m}\left(\frac{V_0}{V}\right)^{1/\kappa}.$$

# ZIMÁNYI AND STRANGENESS

**Strangeness in hadronic matter. Proceedings, International Conference, Strangeness'96, Budapest, Hungary, May 15-17, 1996**

T. Csorgo (Budapest, RMKI)(ed.), P. Levai (Budapest, RMKI)(ed.), J. Zimanyi (Budapest, RMKI)(ed.)
1996

Published in: *Acta Phys.Hung.A* 4 (1996) pp.1-452
Proceedings of: Workshop on Strangeness in Hadronic Matter (Strangeness 96)

**Rapid hadronization and strangeness production** #18

L.P. Csernai (Bergen U. and Budapest, RMKI), T.S. Biro (Bergen U. and Budapest, RMKI), Z.H. Feng (Bergen U. and Budapest, RMKI), A. Mocsy (Bergen U. and Budapest, RMKI), Denes Molnar (Bergen U. and Budapest, RMKI) et al. (1996)

Published in: *Acta Phys.Hung.A* 4 (1996) 45-54 • Contribution to: Workshop on Strangeness in Hadronic Matter (Strangeness 96)

**Particle spectra from the ALCOR model** #15

J. Zimanyi (Budapest, RMKI), T.S. Biro (Budapest, RMKI), T. Csorgo (Budapest, RMKI), P. Levai (Budapest, RMKI) (May, 1996)

Published in: *Acta Phys.Hung.A* 4 (1996) 15-32 • Contribution to: Workshop on Strangeness in Hadronic Matter (Strangeness 96) • e-Print: hep-ph/9609328 [hep-ph]

**Hydrodynamic parameterization of NA44 data on kaon and pion correlations and spectra** #17

T. Csorgo (Columbia U. and Budapest, RMKI), B. Lorstad (Lund U.) (May, 1996)

Published in: *Acta Phys.Hung.A* 4 (1996) 221-232 • Contribution to: Workshop on Strangeness in Hadronic Matter (Strangeness 96) • e-Print: hep-ph/9612325 [hep-ph]

**STRANGENESS'96 IN BUDAPEST AND 65TH BIRTHDAY OF ZIMÁNYI**

**ALL THE 4 PHD STUDENTS OF J. ZIMÁNYI:**

- **L. P. CSERNAI**
- **T. S. BIRÓ**
- **P. LÉVAI**
- **T. CSÖRGŐ**

**VERY FINE TOPICS QUARK COALESCENCE HYDRODYNAMICS**

**VERY FINE FRIENDS ESP. J. P. BONDORF**

**ON IAC OF STRANGENES SUCCESSOR: T. S. BIRO**

# ZIMÁNYI, BOSE-EINSTEIN AND LCMS

inis.iaea.org/records/

narks EKE-Femtoszkópia

IAEA International Atomic Ene
Atoms for Peace and D

**Detailed predictions for two pion correlations in ultrarelativistic heavy ion collisions** #4

S. Pratt (Wisconsin U., Madison), T. Csorgo (Budapest, RMKI), J. Zimanyi (Budapest, RMKI) (1990)

Published in: *Phys.Rev.C* 42 (1990) 2646-2652

DOI cite claim reference search 342 citations

Published September 1991 | Version v1

Report Metadata-only

## Structure of the peak in Bose-Einstein correlations

Csoergoe, T.[1]; Pratt, S.[2]

The pion interferometry in the framework of Wigner-function forma
Einstein correlation function were studied analytically and numeri
frame. Special cases from a decaying Lund string to a relativistic
case it was shown that the Bose-Einstein correlation function exh
the pion source very sensitively to correlations between spacetime and momentum space. The spacetime characteristics can be obtained if one uses a six variable decomposition of the correlation function. Changes in the structure of Bose-Einstein correlation functions in terms of gradual introduction of resonance decays were investigated. The effects of final state Coulomb and Yukawa interactions are also discussed briefly, resulting in a further distortion of the correlation function. (G.P.) 47 refs.; 8 figs

### Additional details

**Production of strange clusters by quark - gluon plasma fragmentation** #1

Z. Arvay (Budapest, RMKI), J. Zimanyi (Budapest, RMKI), T. Csorgo (Budapest, RMKI), Carl B. Dover (Brookhaven), Ulrich W. Heinz (Regensburg U.) (May, 1993)

Published in: *Z.Phys.A* 348 (1994) 201-210

pdf DOI cite claim reference search 4 citations

### Contact

Inquire about this record

p. 75-90., 1991.

**Conference**

Workshop on relativistic heavy ion physics at present and future accelerators. , Budapest (Hungary)., 17-21 Jun 1991.

**LCMS: LONGITUDINALLY COMOVING SYSTEM FOR BOSE-EINSTEIN CORRELATIONS BY NOW, A STANDARD TOOL OF FEMTOSCOPY**

# ZIMANYI AND OTKA, THE HUNGARIAN NSF

MY CAND. SCI. (PH.D) SUPERVISOR
ONE OF THE FIRST MTA-US NSF JOINT PROJECTS
PROF. N. L. BALAZS (STONY BROOK, NY, USA)

→ WE NEED AN NSF STLYE FUNDING AGENCY

→ PEER REVIEWED

→ BOTTOM-UP

→ MODELLED ON US NSF

ZIMÁNYI: SUPPORT FROM THE ANTALL GOVERNMENT
STRONG MORAL ELEMENT
RECENT PUBLICATIONS AND LIFETIME ACHIEVEMENTS

ADVANTAGE FOR HUNGARIAN SCIENCE

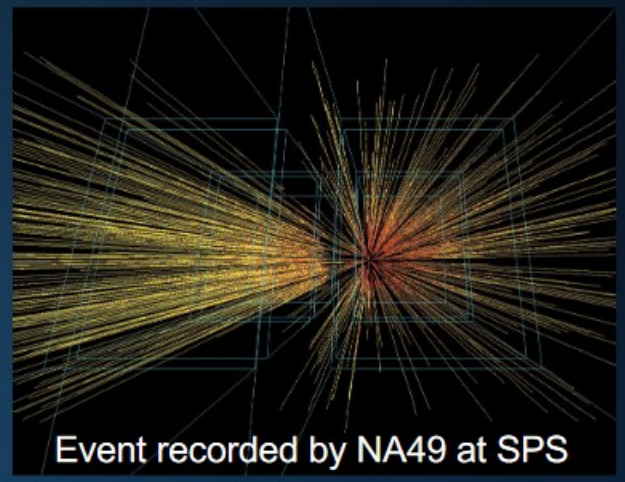
SUPPORT FOR YOUNG RESEARCHERS
RESILIENCE, FOR THE SURVIVAL OF HUNGARIAN SCIENCE

# J. ZIMÁNYI AND CERN

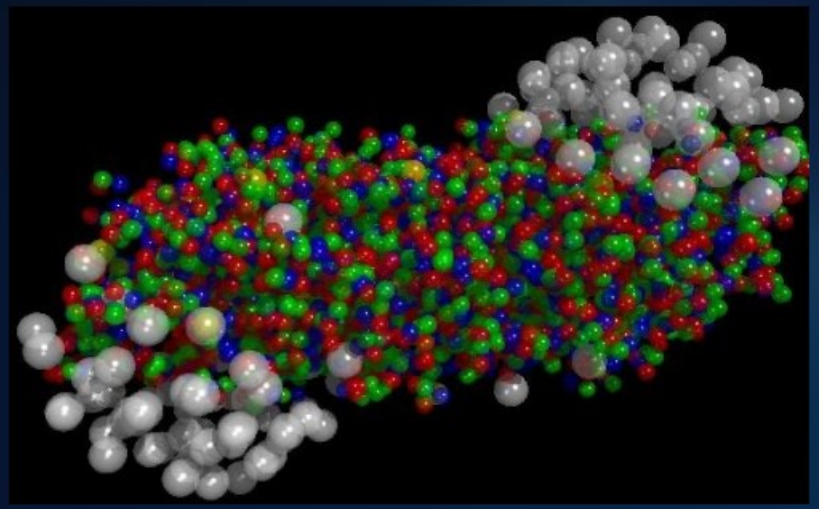
**FOR DETAILS, SEE THE TALKS OF T. S. BÍRÓ AND P. LÉVAI**

## CERN, February 2000: first evidence of a new state of matter, the quark-gluon plasma

- Combined data from the 7 experiments on CERN's HI programme
- Proves an important prediction of the QCD theory. An important step forward in the understanding of the early evolution of the Universe.

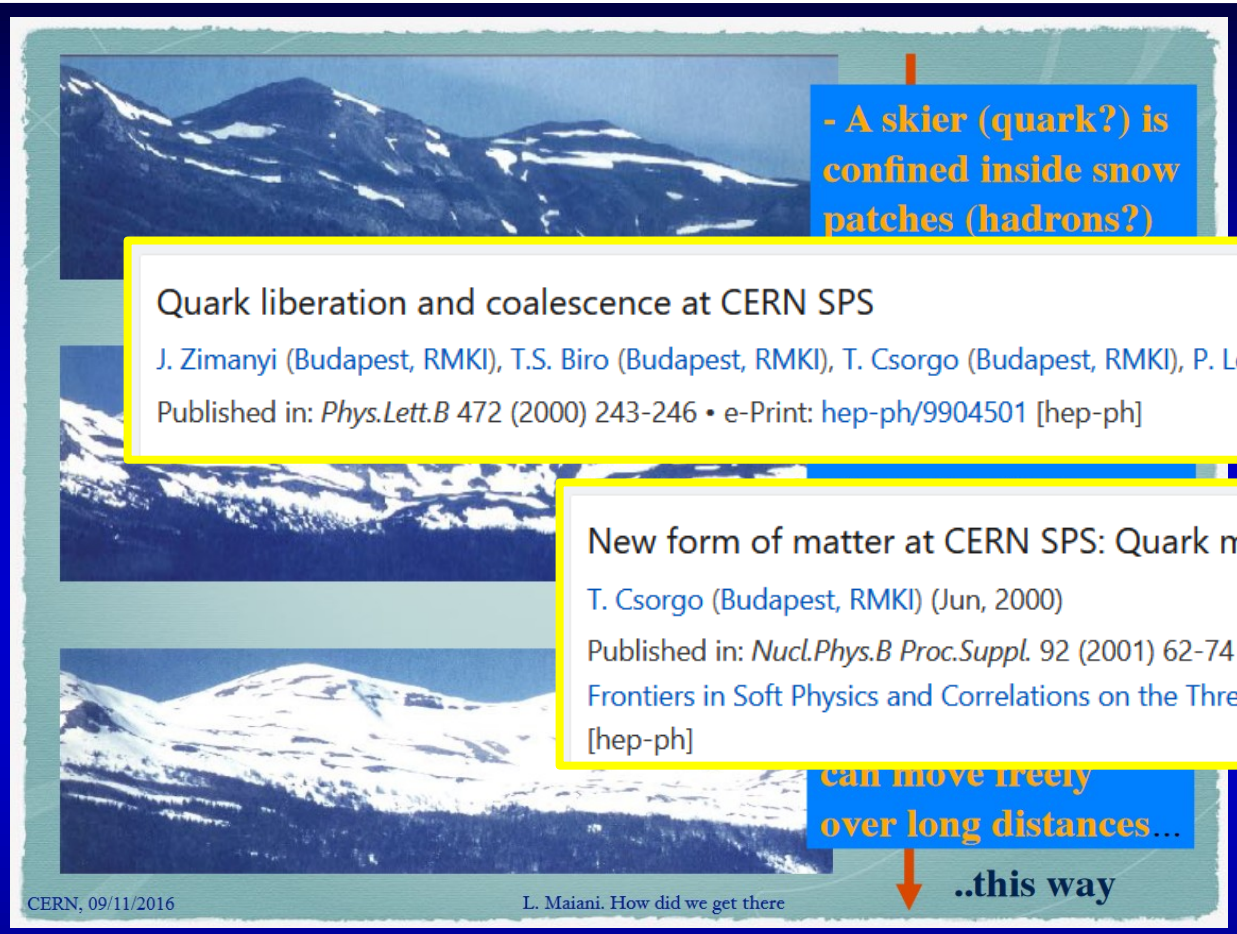


Event recorded by NA49 at SPS



**Luciano Maiani** (CERN DG): "… We now have evidence of a new state of matter where quarks and gluons are not confined. … There is still an entirely new territory to be explored concerning the physical properties of quark-gluon matter. The challenge now passes to RHIC at BNL and later to the LHC."

# 2000 – HOW BIG IS THE MEAN FREE PATH OF QUARKS ??




Quark liberation and coalescence at CERN SPS #1

J. Zimanyi (Budapest, RMKI), T.S. Biro (Budapest, RMKI), T. Csorgo (Budapest, RMKI), P. Levai (Budapest, RMKI) (Apr, 1999)

Published in: *Phys.Lett.B* 472 (2000) 243-246 • e-Print: hep-ph/9904501 [hep-ph]

New form of matter at CERN SPS: Quark matter but not quark gluon plasma #7

T. Csorgo (Budapest, RMKI) (Jun, 2000)

Published in: *Nucl.Phys.B Proc.Suppl.* 92 (2001) 62-74 • Contribution to: 9th International Workshop on Multiparticle Production: New Frontiers in Soft Physics and Correlations on the Threshold of the New Millenium (Torino 2000), 62-74 • e-Print: hep-ph/0011339 [hep-ph]

In the nonrelativistic region $m_\perp < 2m_0$, on the other, flow does couple to the rest mass: for a linear transverse flow velocity profile and a Gaussian transverse density profile one finds exactly [16,17]

$$T_{\rm slope} = T_{\rm f} + \tfrac{1}{2} m_0 \langle v_\perp \rangle^2 \,. \qquad (4)$$

s dependence is indeed observed. Figure 3 shows
tive flow component; inverse slopes of 300 MeV
n obviously not be interpreted as hadronic tem-
is some scatter between the data from different

n tends to reduce the size of the regions within
which particles can develop such correlations: thermal motion, controlled by the thermal
ts in the opposite
effective emission
size is controlled
nula [21,16,17]

(5)

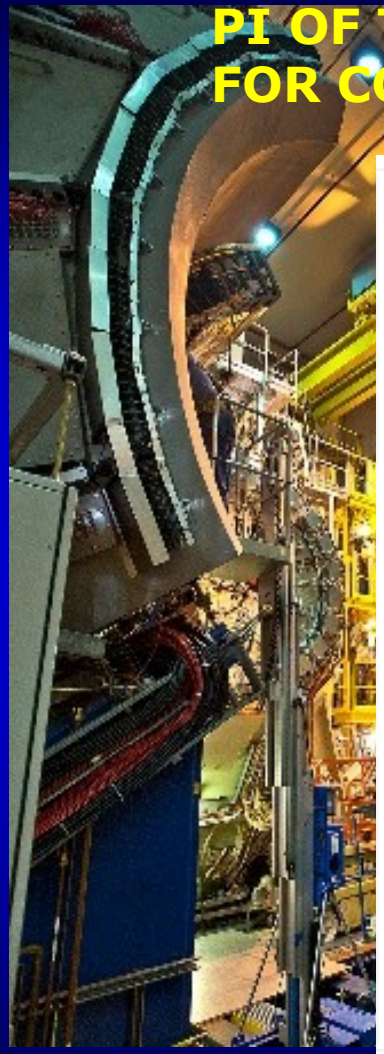
16. T. Csörgő, B. Lörstad, Nucl. Phys. A 590 (1995) 465c; Phys. Rev. C 54 (1996) 1390.
17. R. Scheibl and U. Heinz, Phys. Rev. C 59 (1999) 1585.

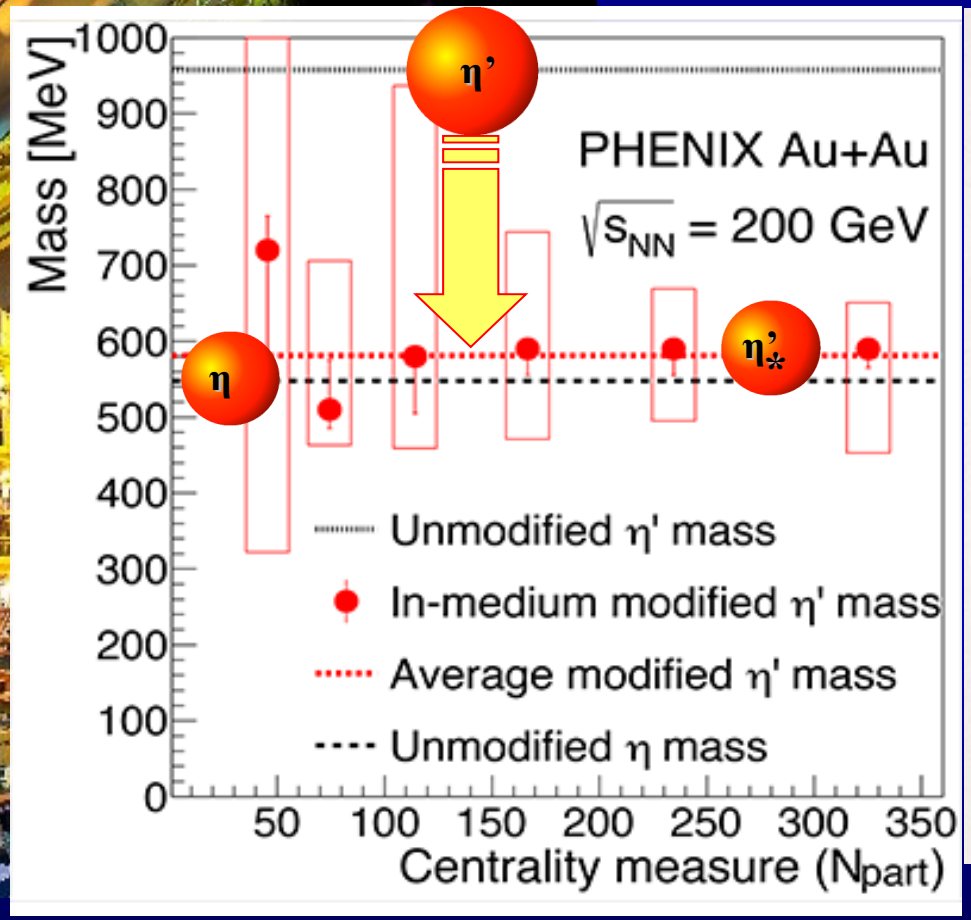
**L. Maiani, DG OF CERN :**
**MEAN FREE PATH OF QUARKS tends to infinity (macroscopic)**

**U. W. Heinz: signs of hydro, it is a fluid, Mean free path tends to zero, with references to Hungarian (Buda-Lund) results: Nucl.Phys.A 685 (2001) 414-431,PRC54 (1996) 1390 Proc. NN2000, e-Print: hep-ph/0009170 [hep-ph]**

# ZIMÁNYI AND PHENIX: AT LEAST TWO NEW STATES

**PI OF THE FIRST OTKA GRANT FOR COLLABORATION WITH PHENIX**






Centrality dependence of Lévy-stable two-pion Bose-Einstein correlations in $\sqrt{s_{NN}}$ = 200 GeV Au+Au collisions

PHENIX Collaboration • N.J. Abdulameer (Debrecen U. and KLTE-ATOMKI) et al. (Jul 11, 2024)

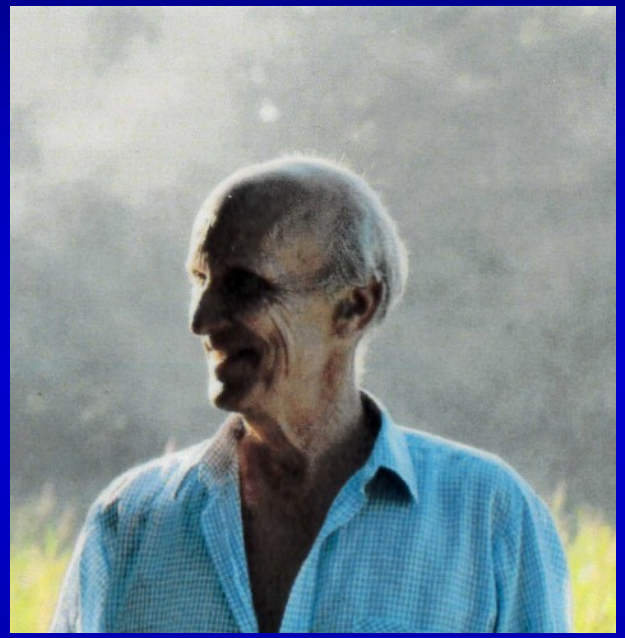
Published in: *Phys.Rev.C* 110 (2024) 6, 6 • e-Print: 2407.08586 [nucl-ex]

**POEM OF T. D. LEE, NOBEL LAUREATE PAINTING BY LI KERAN**

**NUCLEI, HEAVY AS BULLS THROUGH COLLISION GENERATE NEW STATES OF MATTER**

# BOSE-EINSTEIN CORRELATIONS IN HUNGARY

## OUR MENTORS



B. LÖRSTAD
(1941-2013)

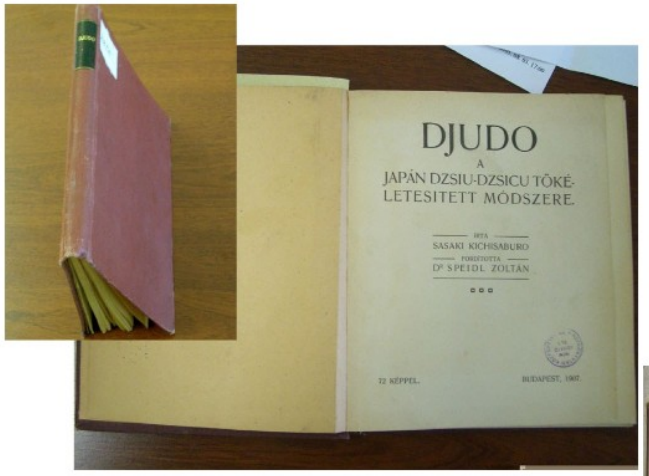
W. KITTEL

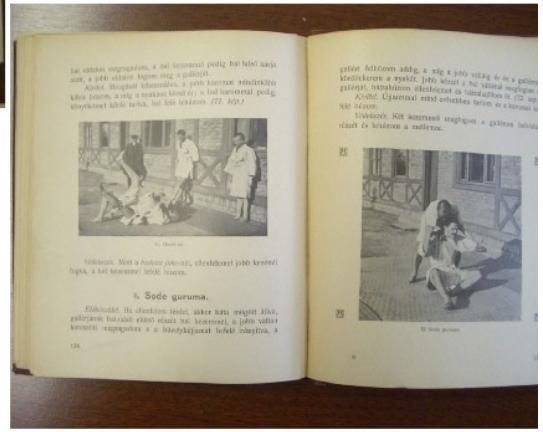
S. NAGAMIYA

W. A. ZAJC

**B. Lörstad inspired from NA44, W. Kittel introduced to NA22/L3, S. Nagamiya supported in PHENIX, W. A. Zajc revived our school on Bose-Einstein femtoscopy in Hungary**

# JOZSÓ AND JUDO



**FROM A TALK OF PROF. S. NAGAMIYA, WHOSE GRANDFATHER, KICHISABURO SASAKI EXPORTED JUDO FROM JAPAN TO HUNGARY IN 1906**

## Persons who Helped Me (2005)

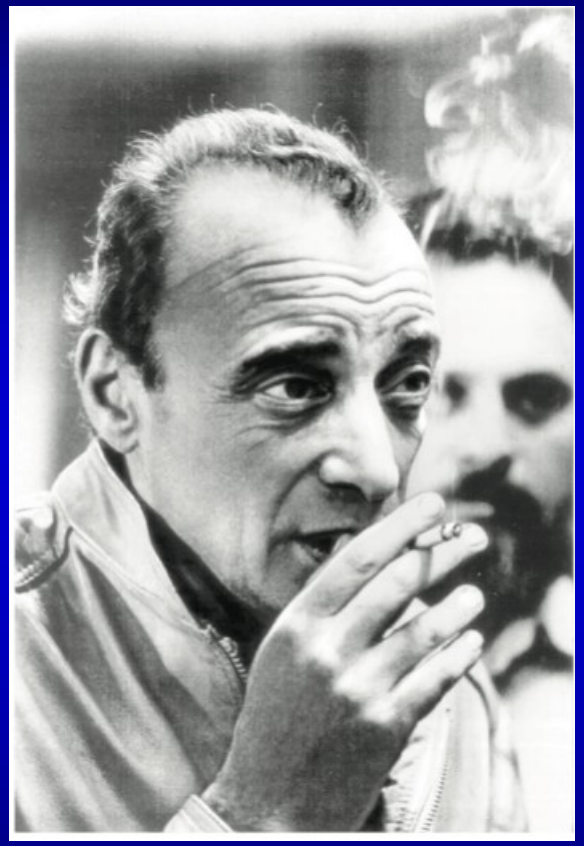
Prof. ZIMÁNYI József and
Mrs. ZIMÁNYI Magdolna

Prof. CSÖRGŐ Tamás (left),
Mr. OZSVÁR András (middle)
and myself (right)

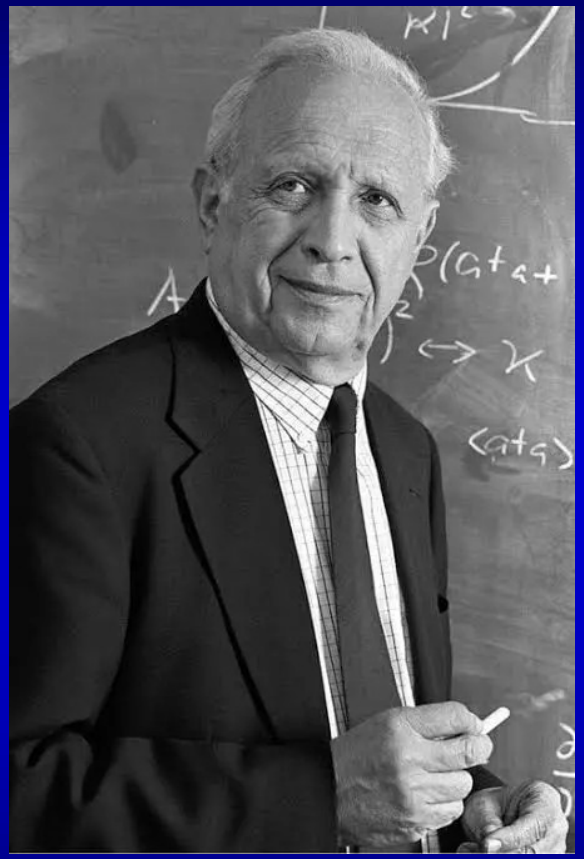
Mr. MOLDOVÁN István

# FORWARDING PHYSICS WORLDWIDE, IN HUNGARY

## OUR MENTORS



V.N. Gribov (1930-1997)



R. J. Glauber (1925-2018)

L. Jenkovszky (1942-2025)

**V.N. Gribov inspired, R. J. Glauber mentored and L. Jenkovszky sprouted a school on forward physics in Hungary**

# OUR OUTSTANDING MENTOR

## J. ZIMÁNYI (1931-2006)

***„AMONG MEDIOCRES, IT IS EASY TO BE OUTSTANDING:***
***THE REAL CHALLENGE IS TO BE OUTSTANDING***
***AMONG OTHER OUTSTANDING PEOPLE”***