

# PUBLICATIONS 2003

## Scientific articles

### „Philadelphian” publications

1. C. Manuel and St. Mrówczyński,  
*QCD Effective Actions from the Solutions of the Transport Equations,*  
Physical Review **D67** (2003) 014015
2. St. Mrówczyński and E.V. Shuryak,  
*Elliptic Flow Fluctuations,*  
Acta Physica Polonica **B34** (2003) 4241
3. J. Randrup and St. Mrówczyński,  
*Chromodynamic Weibel instabilities in relativistic nuclear collisions,*  
Physical Review **C68** (2003) 034903
4. C. Manuel and St. Mrówczyński,  
*Local Equilibrium of the Quark-Gluon Plasma,*  
Physical Review **D68** (2003) 094010
5. C. Alt et al. (NA49 Collaboration),  
*Directed and elliptic flow of charged pions and protons in Pb+Pb collisions  
at 40A and 158A GeV,*  
Physical Review **C68** (2003) 034903
6. F.S. Navarra, O.V. Utyuzh, G. Wilk and Z. Włodarczyk,  
*Estimating inelasticity with the information theory approach,*  
Physical Review **D67** (2003) 114002
7. A.L.S. Angelis et al.,  
*Formation of Centauro in Pb+Pb collisions at the LHC and their detection  
with the CASTOR detector of CMS,*  
Nuclear Physics **B** (Proc.Suppl.) **122** (2003) 205
8. M. Rybczyński, G. Wilk and Z. Włodarczyk,  
*Rapidity spectra analysis in terms of non extensive statistics approach,*  
Nuclear Physics **B** (Proc.Suppl.) **122** (2003) 325
9. M.M. Aggarwal (G. Stefanek) et al.,  
*One-, two- and three-particle distributions from 158A GeV/c central Pb+Pb collisions,*  
Physical Review **C67** (2003) 014906
10. M.M. Aggarwal (G. Stefanek) et al.,  
*Centrality dependence of charged-neutral particle fluctuations in 158A GeV  
 $^{208}\text{Pb} + ^{208}\text{Pb}$  collisions,*  
Physical Review **C67** (2003) 044901
11. M.M. Aggarwal (G. Stefanek) et al.,  
*Particle density fluctuations,*

- Nuclear Physics **A715** (2003) 339c
12. M.M. Aggarwal (G. Stefanek) et al.,  
*Photon Flow in 158A GeV Pb+Pb Collisions*,  
Nuclear Physics **A715** (2003) 579c
  13. W. Broniowski, W. Florkowski, and B. Hiller,  
*Thermal analysis of production of resonances in relativistic heavy-ion collisions*,  
Physical Review **C68** (2003) 034911
  14. M.I. Gorenstein, M. Gaździcki, and K.A. Bugaev,  
*Transverse Activity of Kaons and the Deconfinement Phase Transition  
in Nucleus-Nucleus Collisions*,  
Physics Letters **B567** (2003) 175
  15. M. Gaździcki,  
*Tracing deconfinement in nucleus-nucleus collisions*  
Acta Physica Polonica **B34** (2003) 5771
  16. T. Kosztolowicz and K. Dworecki,  
*Subdiffusion in a Membrane System*,  
Acta Physica Polonica **B34** (2003) 3699
  17. K. Dworecki, S. Wąsik and T. Kosztolowicz:.,  
*Experimental Study of Subdiffusion in a Membrane System*,  
Acta Physica Polonica **B34** (2003) 143
  18. K. Dworecki, A. Ślęzak and S. Wąsik,  
*Temporal and spatial structure of concentration boundary layers in a membrane system*,  
Physica **A326** (2003) 360
  19. M. Kargol and A. Kargol,  
*Mechanistic formalism for membrane transport generated by osmotic and  
mechanical pressure*,  
General Physiology and Biophysics **22** (2003) 51
  20. M. Kargol and A. Kargol,  
*Mechanistic equations for membrane substance transport and their identity  
with Kedem-Katchalsky equations*,  
Biophysical Chemistry **103** (2003) 117
  21. M. Kargol and A. Kargol,  
*A reply to remarks on the mechanistic model of transport processes in porous membranes*  
Journal of Membrane Science **214** (2003) 335

22. M. Czarnota, M. Pajek, D. Banaś, D. Chmielewska, J. Rządkiwicz, Z. Sujkowski, J.-Cl. Dousse, M. Berset, O. Mauron, Y.-P. Maillard, P. A. Raboud, J. Hoszowska, M. Polasik and K. Słabkowska,  
*Observation of L-X-ray satellites and hypersatellites in collisions of O and Ne ions with Mo and Pd,*  
Nuclear Instruments and Methods **B205** (2003) 133
23. D. Banaś, J. Braziewicz, M. Czarnota, I. Fijał, M. Jaskóła, A. Korman, W. Kretschmer, M. Pajek and J. Semaniak,  
*Closing of Coster-Kronig transitions in multiply ionized gold atoms,*  
Nuclear Instruments and Methods **B205** (2003) 139
24. J. Rządkiwicz, D. Chmielewska, A. Gójska, Z. Sujkowski, M. Berset, J.-Cl. Dousse, Y.-P. Maillard, O. Mauron, P. A. Raboud, M. Polasik, J. Hoszowska and M. Pajek,  
*M-subshell ionization in near-central collisions of 20-MeV/amu carbon ions with molybdenum atoms,*  
Nuclear Instruments and Methods **B205** (2003) 128
25. A. Kubala-Kukuś, D. Banaś, J. Braziewicz, U. Majewska and M. Pajek,  
*Comparative Study of Trace Element Contents in Human Full-Term Placenta and Fetal Membranes by Total Reflection X-ray Fluorescence,*  
Spectrochimica Acta **B58** (2003) 725
26. A. Kubala-Kukuś, D. Banaś, J. Braziewicz, U. Majewska and M. Pajek,  
*Concentration Distribution of Trace Elements: from Normal Distribution to Lévy Flights,*  
Spectrochimica Acta **B58** (2003) 717
27. M. Czarnota, M. Pajek, D. Banaś, D. Chmielewska, J. Rządkiwicz, Z. Sujkowski, J.-Cl. Dousse, M. Berset, O. Mauron, Y.-P. Maillard, P. A. Raboud, J. Hoszowska, M. Polasik and K. Słabkowska  
*The study of Th M-x-ray satellites and hypersatellites excited by energetic O and Ne ions,*  
Radiation Physics and Chemistry **68** (2003) 121
28. M. Pajek, D. Banaś, J. Semaniak, J. Braziewicz, U. Majewska, S. Chojnacki, T. Czyżewski, I. Fijał, L. Głowacka, M. Jaskóła, A. Glombik, W. Kretschmer, D. Trautmann, G. Lapicki and T. Mukoyama,  
*Multiple ionization and coupling effects in L-subshell ionization of heavy atoms by oxygen ions,*  
Physical Review **A68** (2003) 022705
29. J. Rządkiwicz, D. Chmielewska, Z. Sujkowski, J.-Cl. Dousse, D. Castella, D. Corminboeuf, J. Hoszowska, P. A. Raboud, M. Polasik, K. Słabkowska and M. Pajek,  
*High-resolution study of the  $K\beta_2$  x-ray spectra of mid-Z atoms bombarded with 20-MeV/amu  $^{12}\text{C}$  ions*  
Physical Review **A68** (2003) 032713

30. M. Kucharzewski, J. Braziewicz, U. Majewska and S. Gózdź,  
*Selenium, copper and zinc concentrations in intestinal cancer tissue  
and in colon and rectum polyps*  
Biological Trace Element Research **92** (2003) 1
31. M. Kucharzewski, J. Braziewicz, U. Majewska and S. Gózdź,  
*Copper, zinc and selenium in whole blood and thyroid tissue of people  
with various thyroid diseases*  
Biological Trace Element Research **93** (2003) 9
32. M. Kucharzewski, J. Braziewicz, U. Majewska, S. Gózdź  
*Iron concentration in intestinal cancer tissue and in colon and rectum polyps*  
Biological Trace Element Research **95** (2003) 19
33. B. Gierat-Kucharzewska, J. Braziewicz, U. Majewska, S. Gózdź and A. Karasiński,  
*Concentration of selected elements in the roots and crowns of both primary  
and permanent teeth with caries diseases,*  
Biological Trace Element Research **96**, 159 (2003)
34. U. Majewska, J. Braziewicz, M. Polasik, K. Słabkowska, I. Fijał, M. Jaskóła,  
A. Korman, S. Chojnacki and W. Kretschmer,  
*Highly excited states of sulphur projectiles inside a carbon target,*  
Nuclear Instruments and Methods **B205** (2003) 799
35. A. Ehlerding, S. T. Arnold, A. A. Viggiano, S. Kalhori, J. Semaniak, A. M. Derkatch,  
S. Rosén, M. af Ugglas, M. Larsson,  
*Rates and products of the dissociative recombination of  $C_3H_7^+$   
in low energy electron collisions,*  
Journal of Physical Chemistry **107** (2003) 2179
36. B. J. McCall, A. J. Saykally, T. R. Geballe, N. L. Djurić, G. H. Dunn, J. Semaniak,  
O. Novotny, A. Al-Khalili, A. Ehlerding, F. Hellberg, S. Kalhori, A. Neau, R. Thomas,  
F. Österdahl, and M. Larsson,  
 *$H_3^+$  dissociative recombination and the cosmic-ray ionisation rate towards zeta Persei*  
Nature **422** (2003) 500
37. A. Al-Khalili, S. Rosén, H. Danared, A. M. Derkatch, A. Källberg, M. Larsson,  
A. Le Padellec, A. Neau, J. Semaniak, R. Thomas, M. af Ugglas, L. Viktor, W. Zong,  
W. J. van der Zande, X. Urbain, M. J. Jensen, R. C. Bilodeau, O. Heber, H. B. Pedersen,  
C. P. Safvan, L. H. Anderson, M. Lange, J. Levin, G. Gwinner, L. Knoll, M. Scheffel,  
D. Schwalm, R. Wester, D. Zajfman, and A. Wolf,  
*Absolute high-resolution rate coefficients for dissociative recombination of electrons  
with  $HD^+$  : Comparison of results from three heavy-ion storage rings*  
Physical Review A **68** (2003) 042702

38. Th. Stöhlker, D. Protic, D. Banaś, H. F. Beyer, A. Gumberidze, C. Kozhuharov, E. Kanter, T. Krings, W. Lewoczko, X. Ma, D. Sierpowski, U. Spillmann, S. Tachenov and A. Warczak  
*Applications of Position Sensitive Germanium Detectors for X-Ray Spectroscopy of Highly-Charged Heavy Ions*  
Nuclear Instruments and Methods **B 205** (2003) 210
39. W. Godłowski, M. Szydłowski, P. Flin, M. Biernacka,  
*Rotation of the Universe and the Angular Momenta of Celestial Bodies,*  
General Relativity and Gravitation **35** (2003) 907

### Other publications

40. M. Kargol, G. Suchanek, M. Przystalski and A. Kargol,  
*Modification of integrated system of long-distance transport of water in plants. Where the plant has its heart?*  
Current Topics in Biophysics **27** (2003)
41. J. Krywult,  
*Distribution of Substructures in Clusters of Galaxies,*  
Astronomical and Astrophysical Transactions **22** (2003) 851
42. P. Flin,  
*My understanding of International Cooperation,*  
Astronomical and Astrophysical Transactions **22** (2003) 805
43. P. Flin,  
*The Interplay of Astronomy and Philosophy,*  
Astronomical and Astrophysical Transactions **22** (2003) 837
44. P. Flin,  
*Subclustering and Cooling Flow in Abell Clusters of Galaxies,*  
Astronomical and Astrophysical Transactions **22** (2003) 841
45. K. Bajan, P. Flin and V.N. Pervushin,  
On the Alignment of Cosmic Anisotropies  
Proceedings of Joint International Conference „New Geometry of Nature”,  
Vol. III, Kazan State University (2003)
46. M. Larsson, N. L. Djurić, G. H. Dunn, A. Neau, A. M. Derkatch, F. Hellberg, S. Kalhori,  
D. P. Popović, J. Semaniak, Å. Larson, and R. Thomas,  
*Studies of dissociative recombination in CRYRING*  
Proceedings on the Symposium on Dissociative Recombination,  
American Chemical Society, ed S. Guberman, Kluwer 2003

47. T. Kosztolowicz,  
*Subdiffusion in a membrane system. A measurement of the subdiffusion coefficient*,  
Proceedings of the 17-th International Conference on Noise and Fluctuations,  
ICNF 2003, ed. J. Sikula, p. 817.
48. A. Okopińska,  
*Optimized expansion for stochastic processes*,  
Proceedings of 8-th International Workshop on Similarity in Diversity,  
Buffalo University, USA, Nova Science
49. O.V. Utyuzh, G. Wilk, M. Rybczyński and Z. Włodarczyk,  
*Bose-Einstein Correlations as Correlations of Fluctuations*,  
Proceedings of XXXII International Symposium on Multiparticle Dynamics,  
eds. A. Sissakin et al., World Scientific, Singapore, 2003, p. 50
50. G. Wilk and Z. Włodarczyk,  
*Power-Like abundance of Elements in Universe*,  
Proceedings of XXXII International Symposium on Multiparticle Dynamics,  
eds. A. Sissakin et al., World Scientific, Singapore, 2003, p. 396
51. O.V. Utyuzh, G. Wilk, M. Rybczyński and Z. Włodarczyk,  
*Are Bose-Einstein Correlations Emerging from Correlations of Fluctuations?*  
Proceedings of Correlations & Fluctuations in QCD, eds. N.G. Antoniu et al.,  
World Scientific, Singapore, 2003, p. 162
52. G. Wilk and Z. Włodarczyk,  
*Traces of Nonextensivity in Particle Physics due to Fluctuations*,  
Proceedings of Correlations & Fluctuations in QCD, eds. N.G. Antoniu et al.,  
World Scientific, Singapore, 2003, p. 344
53. A. Dziech, P. Ślusarczyk and B. Tibken,  
*Modified Zonal and Threshold Image Compression Using PHL Transform*,  
Proceedings of Workshop on Multimedia Communications and Services MCS'03,  
Kielce, Poland, April 2003, p. 41
54. A. Dziech, P. Ślusarczyk, B. Tibken and A. Kummert,  
*Subband Image Coding Using Periodic Haar Piecewise-Linear Functions*,  
Proceedings of IASTED International Conference on Signal Processing,  
Pattern Recognition and Applications (SPPRA 2003),  
Rhodos, Greece, July 2003
55. T. Stöhlker, D. Banaś, H. Beyer, A. Gumberidze, C. Kozhuharov, T. Krings,  
X. Ma, D. Protic, D. Sierpowski, U. Spillmann and S. Tachenov,  
*X-ray spectroscopy of highly charged ions: application of position sensitive  
germanium detectors*  
IEEE Nuclear Science Symposium Conference Record 2002, vol. 1, 366-368 (2003)

56. Thomas Stöhlker, Dariusz Banaś, Heinrich Beyer, Alexandre Gumberidze  
*Lamb Shift Experiments on High-Z One-Electron Systems*  
in Precision Physics of Simple Atomic Systems, eds. S. G. Karshenboim and  
V. B. Smirnov, Springer-Verlag, Heidelberg, (2003) 115-137
57. St. Mrówczyński,  
*Quasiquarks in anisotropic systems,*  
Proc. of 'Strong and Electroweak Matter 2002' (SEWM2002),  
Heidelberg, 2 - 5 October 2002,  
edited by M.G. Schmidt, World Scientific, Singapore, 2003
58. A. Ślęzak, J. Jasik-Ślęzak and K. Dworecki,  
*Effect of concentration boundary layers on passive solute flows in a system of two  
polymeric membranes positioned in vertical planes*  
Polimery w Medycynie, **33** (2003) 43
59. M. Kargol,  
*Mechanistyczne równania transportu membranowego substancji.*  
Nauka Wrocławska, Biuletyn Informacyjny PAN, **5-6** (2003) 7
60. M. Wysocka-Kunisz,  
*Wiedza pojęciowa uczniów z zakresu fizyki,*  
Edukacja **3** (83) 2003, Instytut Badań Edukacyjnych, Warszawa 2003, str. 43

### **Text-books and scripts**

1. J. Semaniak i J. Semaniak,  
*Ruch, siły i materia. Zeszyt ćwiczeń do fizyki i astronomii dla liceum ogólnokształcącego,  
profilowanego i technikum, moduł 1.*  
MAC Edukacja, Kielce 2003
2. J. Semaniak i J. Semaniak,  
*Ruch, siły i materia. Przewodnik metodyczny do fizyki i astronomii dla nauczycieli liceum  
ogólnokształcącego, profilowanego i technikum, moduł 1.*  
MAC Edukacja, Kielce 2003

## PARTICIPATION IN CONFERENCES<sup>†</sup>

### Lectures

- 1) St. Mrówczyński,  
*Event-by-event fluctuations in high-energy nuclear collisions,*  
**Topics in Heavy Ion Collisions**, Montreal, Canada, 25 - 28 June 2003
- 2) St. Mrówczyński,  
*Transport theory of quark-gluon plasma,*  
**39-th Winter School of Theoretical Physics `Foundations of Quark-Gluon Plasma'**,  
Łądek Zdrój, 2 - 12 February 2003
- 3) St. Mrówczyński,  
*Sum rule of the correlation function,*  
**Second Warsaw Meeting on Particle Correlations and Resonances  
in Heavy Ion Collisions**, Warsaw, 15 - 18 October 2003
- 4) A. Okopińska,  
*Gaussian approximation to the condensation of the interacting Bose gas,*  
**Laser Physics 03**, Hamburg, Germany, 28 August 2003
- 5) W. Florkowski,  
*Resonance production in a thermal model,*  
**Second Warsaw Meeting on Particle Correlations and Resonances  
in Heavy Ion Collisions**, Warsaw, 15 - 18 October 2003
- 6) W. Florkowski,  
*Balance functions in a thermal model with resonances,*  
**3-rd Winter School on Heavy-Ion Physics**,  
Budapest, Hungary, 8 - 11 December 2003
- 7) T. Kosztolowicz,  
*Subdiffusion in a membrane system. A measurement of the subdiffusion coefficient,*  
**17-th International Conference on Noise and Fluctuations (ICNF 2003)**,  
Prague, Czech Republic, 18 - 22 August 2003
- 8) M. Pajek and A. Kubala-Kukuś,  
*Censoring: a new approach to detection limits in TXRF*  
**10<sup>th</sup> Conference on Total Reflection X-ray Fluorescence Analysis  
and Related Methods (TXRF)**, Awaji Island, Hyogo, Japan, 14 - 19 September 2003,
- 9) M. Pajek and A. Kubala-Kukuś,  
*Censoring approach to detection limits in x-ray fluorescence analysis,*  
**17<sup>th</sup> International Congress on X-Ray Optics and Microanalysis (ICXOM)**,  
Chamonix Mont Blanc, France, 22-26 September 2003

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<sup>†</sup> In the case of the works of many authors, the name of the person which presented communicate was underlined.



- 10) J. Braziewicz,  
*Statistical aspects of positron emission tomography,*  
**Second International Summer Student School on Nuclear Physics Methods  
and Accelerators in Biology and Medicine**, Poznań, Poland, 19 - 30 June 2003
- 12) D. Banaś, Th. Stöhlker, H. F. Beyer, F. Bosch, A. Bräuning-Demian, A. Gumberidze,  
S. Hagmann, C. Kozhuharov, X. Ma, P. H. Mokler, R. Mann, A. Oršić Muthig,  
D. Sierpowski, U. Spillmann, S. Tachenov, Z. Stachura and A. Warczak,  
*Exclusive production of the  $n=2$  S-states in He-like uranium,*  
**EAS 24 (Energierreiche atomare Stöße)**, February 17-21, 2003, Riezlern, Austria
- 11) M. Wysocka-Kunisz,  
*Kształtowanie postaw proekologicznych w nauczaniu fizyki i przyrody  
we współczesnej szkole,*  
**Konferencja „Edukacja środowiskowa – kształtowanie postaw”**,  
Warszawa, 22 maj 2003

## Communicates

- 1) K. Dworecki, S. Wąsik and B. Ornal-Wąsik,  
*Concentration fluctuations in solution boundary layers in membrane system,*  
**Hairy Interfaces and Stringly Molecules**, Odense, Denmark, 13 - 17 August 2003
- 2) T. Kosztolowicz,  
*Subdiffusion in a membrane system,*  
**28-th Conference of Middle European Cooperation in Statistical Physics**,  
Saarbrücken, Germany, 20 - 22 March 2003
- 3) T. Kosztolowicz,  
*Measuring of the subdiffusion coefficient,*  
**16-th Marian Smoluchowski Symposium on Statistical Physics. Fundamentals  
and Applications**, Zakopane, Poland, 6 - 11 September 2003
- 4) J. Braziewicz, A. Kubala-Kukuś and M. Pajek,  
*TXRF studies of trace elements in biomedical samples,*  
**TXRF-2003 Satellite Meeting on Micro-X-Ray Beam Analysis**,  
Osaka, Japan, 13 September 2003,
- 5) A. Kubala-Kukuś, E. Kuternoga, J. Braziewicz and M. Pajek  
*Log-stable concentration distribution of trace elements in biomedical samples,*  
**17<sup>th</sup> International Congress on X-Ray Optics and Microanalysis (ICXOM)**,  
Chamonix Mont Blanc, France, 22-26 September 2003

- 6) J. Braziewicz, R. Dudzik, A. Kubala-Kukuś, M. Paciorek, M. Pajek, J. Rutkowski, M. Stankiewicz, J. Szlachetko and J. Semaniak,  
*Investigation of depth profiles of trace element distributions in wooden sculptures with XRF method*,  
**17<sup>th</sup> International Congress on X-Ray Optics and Microanalysis (ICXOM)**,  
Chamonix Mont Blanc, France, 22-26 September 2003
- 7) M. Czarnota, M. Pajek, D. Banaś, D. Chmielewska, J. Rządkiwicz, Z. Sujkowski, J.-Cl. Dousse, M. Berset, O. Mauron, Y.-P. Maillard, P. A. Raboud, J. Hoszowska, M. Polasik and K. Słabkowska,  
*The structure of palladium L-x-ray satellites excited by fast oxygen and neon ions*,  
**34<sup>th</sup> Conference of the European Group of Atomic Spectroscopy (EGAS-2003)**  
Brussels, Belgium, 15 - 18 July 2003,
- 8) M. Czarnota, M. Pajek, D. Banaś, D. Chmielewska, J. Rządkiwicz, Z. Sujkowski, J.-Cl. Dousse, M. Berset, O. Mauron, Y.-P. Maillard, P. A. Raboud, J. Hoszowska, M. Polasik and K. Słabkowska,  
*High-resolution measurements of L- and M-x-ray satellites and hypersatellites excited by energetic O and Ne ions*,  
**23<sup>rd</sup> International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC)**, Stockholm, Sweden, 23 - 29 July 2003
- 9) D. Banaś, Th. Stöhlker, H. F. Beyer, F. Bosch, A. Bräuning-Demian, A. Gumberidze, S. Hagmann, C. Kozhuharov, X. Ma, P. H. Mokler, R. Mann, A. Oršić Muthig, D. Sierpowski, U. Spillmann, S. Tachenov, Z. Stachura and A. Warczak,  
*Exclusive production of the  $n=2$  S-states in He-like uranium*,  
**DPG 67 (Physikertagung der Deutschen Physikalischen Gesellschaft e.V.)**,  
March 24 –28, 2003, Hannover, Germany
- 10) D. Banaś, Th. Stöhlker, H. F. Beyer, F. Bosch, A. Bräuning-Demian, A. Gumberidze, S. Hagmann, C. Kozhuharov, X. Ma, P. H. Mokler, R. Mann, A. Orsic Muthig, D. Sierpowski, U. Spillmann, S. Tachenov, Z. Stachura, A. Warczak,  
*Population Of The  $N=2$  S-States In He-Like Uranium via K-Shell Ionization Of  $U^{89+}$* ,  
**XXIII International Conference on Photonic Electronic and Atomic Collisions (ICPEAC)**, July 23-29, 2003, Stockholm, Sweden
- 11) A. Ehlerding, S. T. Arnold, A. A. Viggiano, F. Hellberg, R. Thomas, W. Geppert, S. Kalhori, J. Semaniak, M. Larsson, F. Österdahl and M. af Ugglas,  
*Dissociative recombination of hydrocarbon ions*,  
**23<sup>rd</sup> International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC)**, Stockholm, Sweden, 23 - 29 July 2003
- 12) N. Djurić, J. Semaniak, R. Thomas, O. Novotny, A. Al-Khalili, A. Ehlerding, F. Hellberg, A.J. Huneycutt, S. Kalhori, B. J. McCall, A. Neau, A. Paál, R. J. Saykally, F. Österdahl, M. Larsson and G. H. Dunn,  
*Resonant ion-pair formation of H products in electron collisions with rovibrationally cold  $H_3^+$  ions*,  
**23<sup>rd</sup> International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC)**, Stockholm, Sweden, 23 - 29 July 2003
- 13) P. Flin, J. Krywult i M. Biernacka,

*On the ellipticity of galaxy clusters,*  
**XXV General Assembly of the International Astronomical Union,**  
Sydney, Australia, 14-17 July 2003

- 14) K. Dworecki, M. Drabik, T. Hasegawa, B. Ornal-Wąsik i S. Wąsik  
*Modyfikacja własności transportowych membran polimerowych\**,  
**XXXVII Zjazd Polskiego Towarzystwa Fizycznego**, Gdańsk, 15-18 wrzesień 2003
- 15) J. Braziewicz et al.,  
*Rentgenowska analiza fluorescencyjna XRF i TXRF*,  
**XXXVII Zjazd Polskiego Towarzystwa Fizycznego**, Gdańsk, 15-18 wrzesień 2003
- 16) M. Czarnota et al.,  
*Jonizacja wewnętrznych powłok elektronowych w zderzeniach atomów z ciężkimi jonami*,  
**XXXVII Zjazd Polskiego Towarzystwa Fizycznego**, Gdańsk, 15-18 wrzesień 2003
- 17) D. Banaś, M. Pajek and J. Semaniak,  
*Badanie procesów rekombinacji jonów z elektronami swobodnymi*,  
**XXXVII Zjazd Polskiego Towarzystwa Fizycznego**, Gdańsk, 15-18 wrzesień 2003
- 18) M. Rybczyński, G. Stefanek and NA49 Collaboration,  
*Relativistic Heavy Ion Collisions in NA49 CERN Experiment*,  
**XXXVII Zjazd Polskiego Towarzystwa Fizycznego**, Gdańsk, 15-18 wrzesień 2003
- 19) J. Krywult i M. Biernacka,  
*Obserwatorium Astronomiczne Akademii Świętokrzyskiej*,  
**XXXI Zjazd Polskiego Towarzystwa Astronomicznego**, Toruń, wrzesień 2003
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