Vadim A. Naumov

LIST OF SCIENTIFIC PUBLICATIONS

January 12, 2000

Irkutsk State University, Irkutsk,

1. Publications in Journals and Conference Proceedings

1. G. V. Korenblit, V. A. Naumov, and V. L. Chernyak, Asymptotic behavior of the amplitudes for exclusive electroproduction of hadrons, Yad. Fiz. **29** (1) (1979) 153–159 [Sov. J. Nucl. Phys. **29** (1) (1979) 77–80].

2. N. V. Il'in and V. A. Naumov, On some radiative decays of $\pi, \eta,$ and η' mesons, in *Investigations in Geomagnetism, Aeronomy, and Solar Physics* No. **57**, *Theoretical Physics* ("Nauka", Moscow, 1981) pp. 19–23 (**in Russian**).

3. V. A. Naumov, Experimental restrictions on parameters of a chiral quark model, in *Investigations in Geomagnetism, Aeronomy, and Solar Physics* No. **57**, *Theoretical Physics* ("Nauka", Moscow, 1981) pp. 98–101 (**in Russian**).

4. E. V. Bugaev, V. A. Naumov, A. I. Orlov, and S. I. Sinegovsky, On some method to solve the transport equation for the cosmic-ray muons in a homogeneous medium, in *Investigations in Geomagnetism, Aeronomy, and Solar Physics* No. **69**, *Theoretical Physics* ("Nauka", Moscow, 1984) pp. 73–81 (**in Russian**).

5. V. A. Naumov, A method for calculating geomagnetic corrections to differential energy spectra of cosmic-ray nucleons in the atmosphere, in *Investigations in Geomagnetism, Aeronomy, and Solar Physics* No. **69**, *Theoretical Physics* ("Nauka", Moscow, 1984) pp. 82–94 (**in Russian**).

6. E. V. Bugaev, V. A. Naumov, and S. I. Sinegovsky, Interactions of super high energy cosmic-ray muons and their fluxes at large depths, Yad. Fiz. **41** (2) (1985) 383–392 [Sov. J. Nucl. Phys. **41** (2) (1985) 245–250].

7. E. V. Bugaev, V. A. Naumov, and S. I. Sinegovsky, Energy spectra and intensities of cosmic-ray muons at great depths, Izv. Akad. Nauk SSSR, Ser. Fiz. **49** (7) (1985) 1389–1392 [Bull. Acad. of Sci. of the USSR, Phys. Ser. **49** (7) (1985) 146–149].

8. E. V. Bugaev and V. A. Naumov, The nucleon component of cosmic radiation in the atmosphere at intermediate energies, in *Investigations in Geomagnetism, Aeronomy, and Solar Physics* No. **73**, *Solar-Earthly Physics* ("Nauka", Moscow, 1984) pp. 198–211 (**in Russian**).

9. N. M. Budnev, V. A. Naumov, and Yu. V. Parfenov, Rapidly convergent perturbation theory for processes of light transport in water, in *Theses of the Meeting "Prospects for Realization of the DUMAND Project in the Pacific Ocean"*, Vladivostok, 1986, edited by A. V. Alekseev (Far Eastern Scientific Center of the USSR Academy of Sciences, Vladivostok, 1986) pp. 11–12 (**in Russian**).

10. E. V. Bugaev and V. A. Naumov, Low and medium energy neutrinos in the atmosphere, Izv. Akad. Nauk SSSR, Ser. Fiz. **50** (11) (1986) 2239–2241 [Bull. Acad. of Sci. of the USSR, Phys. Ser. **50** (11) (1986) 156–158].

11. E. V. Bugaev, G. V. Domogatsky, and V. A. Naumov, Cosmic rays and atmospheric neutrinos at low energies, in *Proceedings of the Japan–U. S. Seminar on Cosmic Ray Muon and Neutrino Physics/Astrophysics Using Deep Underground/Underwater Detectors*, Tokyo, June 1986), edited by Y. Ohashi and V. Z. Peterson (Institute for Cosmic Ray Research, University of Tokyo, 1986) pp. 232–241.

12. A. N. Vall, V. A. Naumov, and S. I. Sinegovsky, The hadronic component of high-energy cosmic rays and the growth of the inelastic cross sections, Yad. Fiz. **44** (5) (1986) 1240–1250 [Sov. J. Nucl. Phys. **44** (5) (1986) 806–812].

13. E. V. Bugaev and V. A. Naumov, Cosmic-ray muons and neutrinos at low and intermediate energies, Yad. Fiz. **45** (5) (1987) 1380–1391 [Sov. J. Nucl. Phys. **45** (5) (1987) 857–864].

14. E. V. Bugaev and V. A. Naumov, Atmospheric muons and neutrinos of low and medium energies, in *Proceedings of the 20th International Cosmic Ray Conference*, Moscow, USSR, August 2–15, 1987, edited by V. A. Kozyarivsky *et al.* ("Nauka", Moscow, 1987), Vol. **6**, pp. 196–199.

15. E. V. Bugaev, E. S. Zaslavskaya, V. A. Naumov, and S. I. Sinegovsky, Muons and neutrinos of cosmic rays at energies above 10 TeV, *ibid.*, pp. 305–308.

16. E. V. Bugaev and V. A. Naumov, Influence of geomagnetic field on low energy atmospheric neutrino fluxes, in *Proceedings of the Second International Symposium "Underground Physics'87"*, Baksan Valley, August 1987, edited by G. V. Domogatsky *et al.* ("Nauka", Moscow, 1988) pp. 255–258.

17. E. V. Bugaev, V. A. Naumov, S. I. Sinegovsky, and E. S. Zaslavskaya, Muons from decay of charmed particles in the atmosphere, in *Investigations in Geomagnetism, Aeronomy, and Solar Physics* No. **82**, *Theoretical Aspects of the Solar–Earthly Physics* ("Nauka", Moscow, 1988) pp. 25–33 (**in Russian**).

18. E. V. Bugaev, V. A. Naumov, S. I. Sinegovsky, and E. S. Zaslavskaya, Prompt leptons in cosmic rays, Il Nuovo Cimento **12 C**, No. 1 (1989) 41–73.

19. L. Byambajargal, V. A. Naumov, and S. I. Sinegovsky, Atmospheric muons from decay of π and K mesons, in *Scientific Transactions of the Institute of Physics and Technics* No. **27** (Mongolian Academy of Sciences, Ulan Bator, 1989) pp. 44–53 (**in Russian**).

20. E. V. Bugaev and V. A. Naumov, On the interpretation of the Kamiokande neutrino experiment, Phys. Lett. **B 232** No. 3 (1989) 391–397.

21. E. V. Bugaev, V. A. Naumov, S. I. Sinegovsky, and E. S. Zaslavskaya, Spectrum of cosmic-ray muons at energies of 10–10^3 TeV and data of underground measurements, Izv. Akad. Nauk SSSR, Ser. Fiz. **53** (2) (1989) 342–345 [Bull. Acad. of Sci. of the USSR, Phys. Ser. **53** (2) (1989) 135–138].

22. E. V. Bugaev and V. A. Naumov, On the interpretation of the Kamiokande neutrino experiment, Yad. Fiz. **51** (3) (1990) 774–776 [Sov. J. Nucl. Phys. **51** (3) (1990) 493–494].

23. E. V. Bugaev and V. A. Naumov, Energy spectra of low energy atmospheric neutrinos and neutrino oscillation hypothesis, in *Proceedings of the 21st International Cosmic Ray Conference*, Adelaide, Australia, January 6–19, 1990, edited by R. Protheroe (Department of Physics and Mathematical Physics, The University of Adelaide, Graphic Services, Northfield, South Australia, 1990), Vol. **10**, pp. 8–10.

24. V. A. Naumov and E. S. Zaslavskaya, Flux limits for relativistic cosmic photinos from the Kamioka neutrino experiment, in *Proceedings of the International Tallinn Symposium on Neutrino Physics*, Lohusalu, October 1990, edited by I. Ots *et al.* (Estonian Academy of Sciences, Tallinn, 1990) pp. 128–135.

25. E. S. Zaslavskaya and V. A. Naumov, Restrictions on the fluxes of relativistic cosmic photinos, Yad. Fiz. **53** (2) (1991) 477–490 [Sov. J. Nucl. Phys. **53** (2) (1991) 300–307].

26. V. A. Naumov, Topological phases for system of three mixed Dirac neutrinos in a medium of varying density, Pis'ma v Zh. Eksp. Teor. Fiz. **54** (4) (1991) 189–192 [JETP Lett. **54** (4) (1991) 185–188].

27. V. A. Naumov and E. S. Zaslavskaya, Flux limits for relativistic cosmic photinos from the Kamiokande neutrino experiment, Nucl. Phys. **B 361** (1991) 675–694.

28. V. A. Naumov, Three-neutrino oscillations in matter and topological phases, Zh. Eksp. Teor. Fiz. **101** (1) (1992) 3–17 [Sov. Phys. JETP. **74** (1) (1992) 1–8].

29. V. A. Naumov, Three-neutrino oscillations in matter, CP-violation, and topological phases, Intern. J. of Mod. Phys. D **1** (2) (1992) 379–399.

30. L. Dell'Agnello, B. Monteleoni, V. A. Naumov, and Tang Hong, On the possibility of detecting multiple production of gauge bosons induced by cosmic neutrinos using NESTOR, in *Proceedings of the 2nd NESTOR International Workshop*, Fortress of Niokastro, Pylos, Greece, October 19-22, 1992, edited by L. K. Resvanis (Physics Laboratory of the Athens University, Athens, 1992), pp. 75–78.

31. V. A. Naumov, S. I. Sinegovsky, and E. V. Bugaev, A method for calculating energy spectra of cosmic-ray muons under thick layers of matter, *ibid.*, pp. 119–140. [E-Print ArXiv: hep–ph/9301263 (January 22, 1993).]

32. V. A. Naumov, Cosmic-ray neutrinos at low and intermediate energies, in *Proceedings of the International Workshop on ν_μ/ν_e Problem in Atmospheric Neutrinos*, Gran Sasso, Italy, March 5–6, 1993, edited by V. S. Berezinsky and G. Fiorentini (LNGS, L'Aquila, Italy, 1993), pp. 25–70.

33. E. V. Bugaev, V. A. Naumov, S. I. Sinegovsky, A. Misaki, N. Takahashi, and E. S. Zaslavskaya, Muon depth-intensity relation and data of underground and underwater experiments, in *Proceedings of the 3rd NESTOR International Workshop*, Fortress of Niokastro, Pylos, Greece, October 19–21, 1993, edited by L. K. Resvanis (Physics Laboratory of the Athens University, Athens, 1993), pp. 268–304; in *Proceedings of the RIKEN International Workshop on Electromagnetic and Nuclear Cascade Phenomena in High and Extremely High*

Energies, Tokyo, Japan, December 22–24, 1993, edited by M. Ishihara and A. Misaki (RIKEN, Tokyo, 1994) pp. 264–300.

34. V. A. Naumov, Resonance values of Berry's phases for three-neutrino oscillations in matter, in *Proceedings of the 3rd NESTOR International Workshop*, Fortress of Niokastro, Pylos, Greece, October 19–21, 1993, edited by L. K. Resvanis (Physics Laboratory of the Athens University, Athens, 1992), pp. 306–321.

35. V. A. Naumov, Berry phases for three-neutrino oscillations in matter, Phys. Lett. **B 323**, No. 3–4 (1994) 351–359.

36. V. A. Naumov, Resonance in geometric phases for three-neutrino oscillations in matter, in *Proceedings of the International Topical Workshop on Solar-Neutrino Problem: Astrophysics or Oscillations?*, Gran Sasso, Italy, February 28 – March 1, 1994, edited by V. Berezinsky and E. Fiorini (Laboratory Nazionale del Gran Sasso, L'Aquila, Italy, 1994), Vol. **2**, pp. 179–208.

37. V. A. Naumov, S. I. Sinegovsky, and E. V. Bugaev, A new method for calculating the energy spectrum of cosmic-ray muons under thick layers of matter, Yad. Fiz. **57** (3) (1994) 439–451 [Physics of Atomic Nuclei **57**, No. 3 (1994) 412–424].

38. S. E. Korenblit, V. E. Kuznetsov, and V. A. Naumov, Geometric phases for three-level non-Hermitian system, in *Proceedings of the International Workshop on "Quantum Systems: New Trends and Methods"*, Minsk, Belarus, 1994, edited by A. O. Barut *et al.* (World Scientific Publ., Singapore, 1995) pp. 209–217.

39. T. K. Gaisser, M. Honda, K. Kasahara, H. Lee, S. Midorikawa, V. A. Naumov, and T. Stanev, Comparison of Neutrino Flux Calculations, in *Proceedings of the 24th International Cosmic Ray Conference*, Roma, Italy, August 28 – September 8, 1995, Vol. **1**, pp. 702-705.

40. V. E. Kuznetsov and V. A. Naumov, Relationship between the Kobayashi–Maskawa and Chau–Keung Presentations of the Quark Mixing Matrix, Il Nuovo Cimento **108 A**, No. 12 (1995) 1451–1456. [E-Print ArXiv: hep–ph/9605211 (May 2, 1996).]

41. T. K. Gaisser, M. Honda, K. Kasahara, H. Lee, S. Midorikawa, V. A. Naumov, and T. Stanev, Comparison of Atmospheric Neutrino Flux Calculations at Low Energies, Phys. Rev. D **54** (1996) 5578–5584. [E-Print ArXiv: hep–ph/9608253 (August 7, 1996).]

42. A. Misaki, V. A. Naumov, T. S. Sinegovskaya, and S. I. Sinegovsky, Form factors of three-particle kaon decay and atmospheric neutrino flavour ratio at high energies, in *Proceedings of the 25th International Cosmic Ray Conference*, Durban, South Africa, July 30 – August 6, 1997, edited by M. S. Potgieter, B. C. Raubenheimer, and D. J. van der Walt (Wesprint, Potchefstroom, Space Research Unit, 1997) Vol. **7**, pp. 129–132.

43. V. A. Naumov, T. S. Sinegovskaya, and S. I. Sinegovsky, The $K_{\ell 3}$ Form factors and atmospheric neutrino flavor ratio at high energies, Il Nuovo Cimento **111 A**, No. 2 (1998) 129–148. [E-Print ArXiv: hep–ph/9802410 (April 23, 1998).]

44. E. V. Bugaev, A. Misaki, V. A. Naumov, T. S. Sinegovskaya, S. I. Sinegovsky, and N. Takahashi, Atmospheric muon flux at sea level, underground, and underwater, Phys. Rev. D **58** (1998) 054001. [E-Print ArXiv: hep–ph/9803488 (March 30, 1998).]

45. V. A. Naumov, Physics of atmospheric neutrinos (introductory overview), in *Proceedings of the Baikal School on Fundamental Physics "Astrophysics and Microworld Physics"*, Irkutsk, Russia, October 11–17, 1998, edited by V. A. Naumov, Yu. V. Parfenov, and S. I. Sinegovsky, (Irkutsk State University, Irkutsk, 1998), pp. 67–85.

46. V. A. Naumov, T. S. Sinegovskaya, and S. I. Sinegovsky, Spectra of secondary particles in $K_{\ell 3}$ decays, *ibid.*, State University, Irkutsk, 1998), pp. 211–226 (**in Russian**).

47. V. A. Naumov and L. Perrone, Neutrino propagation through dense matter, Astroparticle Physics, **10** (2-3) (1999) 239–252. [E-Print ArXiv: hep–ph/9804301 (April 27, 1998).]

48. A. Misaki, V. A. Naumov, T. S. Sinegovskaya, S. I. Sinegovsky, and N. Takahashi, Expected muon energy spectra and zenithal distributions deep underwater, in Proceedings of the 26th International Cosmic Ray Conference, Salt Lake City, Utah, August 17–25, 1999, edited by D. Kieda *et al.* Vol. **2**, pp. 139–142. [E-Print ArXiv: hep–ph/9905399 (May 20, 1999).]

49. V. A. Naumov, T. S. Sinegovskaya, and S. I. Sinegovsky, Charm production and muon spectra on great depths underwater, in *Proceedings of the Second Baikal School on Fundamental Physics "Interactions of Radiation with Matter"*, Irkutsk, Russia, September 13–19, 1999, edited by Yu. N. Denisyuk (Irkutsk State University, Irkutsk, 2000), pp. 309–317 (**in Russian**).

50. V. A. Naumov and T. S. Sinegovskaya, Z factor method of solving the one-dimensional transport equations for cosmic-ray nucleons in the atmosphere, *ibid.*, pp. 328-339 (**in Russian**).

51. V. A. Naumov, T. S. Sinegovskaya, and S. I. Sinegovsky, On the possibility for registration of muons from charm decay with deep underwater neutrino telescopes, to appear in Physics of Atomic Nuclei.

52. V. A. Naumov and T. S. Sinegovskaya, An elementary method for solution to transport equations of cosmic-ray nucleons in the atmosphere, to appear in Physics of Atomic Nuclei.

2. Publications within the BAIKAL Collaboration

53. The BAIKAL Collaboration (L. B. Bezrukov *et al.*, presented by G. V. Domogatsky), Present status of Baikal deep underwater neutrino experiment, in *Proceedings of the Japan–U.S. Seminar on Cosmic Ray Muon and Neutrino Physics/Astrophysics Using Deep Underground/Underwater Detectors*, Tokyo, June 1986, edited by Y. Ohashi and V. Z. Peterson (Institute for Cosmic Ray Research, University of Tokyo, 1986) pp. 328–336; in *Proceedings of the 12th International Conference on Neutrino Physics and Astrophysics "Neutrino'86"*, Sendai, August 1986, (World Scientific Publ., Singapore, 1986), pp. 737–745.

54. The BAIKAL Collaboration (L. B. Bezrukov *et al.*, presented by G. V. Domogatsky), Modern status of Baikal underwater neutrino experiment, in *Proceedings of the 20th International Cosmic Ray Conference*, Moscow, USSR, August 2–15, 1987, edited by V. A. Kozyarivsky *et al.* ("Nauka", Moscow, 1987), Vol. **6**, pp. 292–295.

55. The BAIKAL Collaboration (I. A. Belolaptikov *et al.*, presented by G. V. Domogatsky), The Baikal experiment [Nucl. Phys. B (Proc. Suppl.) **14B** (1990) 51–60].

56. The BAIKAL Collaboration (I. A. Belolaptikov *et al.*, presented by G. V. Domogatsky), The lake Baikal deep underwater detector, in *Proceedings of the 14th International Conference on Neutrino Physics and Astrophysics "Neutrino'90"*, CERN, Geneva, June 14–15, 1990, edited by J. Panman and K. Winter [Nucl. Phys. B (Proc. Suppl.) **19** (1991) 388–395].

57. The BAIKAL Collaboration (I. A. Belolaptikov *et al.*, presented by G. V. Domogatsky), The lake Baikal neutrino project, in *Proceedings of the 3rd International Workshop on Neutrino Telescopes*, Venice, Italy, February 26–28, 1991, edited by M. Baldo Ceolin (Tipografia CLEUP di Padova, 1991) pp. 365–377 [see also Baikal Internal Note 92-01].

58. The BAIKAL Collaboration (S. D. Alatin *et al.*, presented by Ch. Spiering), Physics capabilities of the second-stage Baikal detector NT–200, in *Proceedings of the Second International Workshop on Theoretical and Phenomenological Aspects of Underground Physics*, Toledo, Spain, September 9–13, 1991, edited by A. Morales, J. Morales, and J. A. Villar [Nucl. Phys. B (Proc. Suppl.) **28 A** (1992) 491–495].

59. The BAIKAL Collaboration (I. A. Belolaptikov *et al.*, presented by R. Wischnewski), Status of the Baikal neutrino detector, in *Proceedings of the 2nd NESTOR International Workshop*, October 19–22, 1992, Fortress of Niokastro, Pylos, Greece, edited by L. K. Resvanis (Physics Laboratory of the Athens University, Athens, 1992), pp. 238–241.

60. The BAIKAL Collaboration (I. A. Belolaptikov *et al.*, presented by R. Wischnewski), The lake Baikal telescope NT-36: a first deep underwater multistring array, in *Proceedings of the 26th International Conference on High Energy Physics*, Dallas, 1992, Vol. **2**, pp. 1246–1249.

3. Publications within the NESTOR Collaboration

61. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by L. K. Resvanis), NESTOR. A neutrino particle astrophysics underwater laboratory for the Mediterranean, in *Proceedings of the 2nd NESTOR International Workshop*, October 19–22, 1992, Fortress of Niokastro, Pylos, Greece, edited by L. K. Resvanis (Physics Laboratory of the Athens University, Athens, 1992), pp. 1–19.

62. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by S. Katsanevas), The physics potential of NESTOR, some topics, *ibid.*, pp. 171–189.

63. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by L. K. Resvanis), NESTOR. A neutrino particle astrophysics underwater laboratory for the Mediterranean, in *Proceedings of the 5th International Workshop on Neutrino Telescopes*, Venice, Italy, March 2–4, 1993, edited by M. Baldo Ceolin (Tipografia CLEUP di Padova, 1993) pp. 321–343.

64. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by L. K. Resvanis), NESTOR: A neutrino particle astrophysics underwater laboratory for the Mediterranean, in *Proceedings of the 3rd International Workshop on Theoretical and Phenomenological Aspects of Underground Physics*, Laboratory Nazionali del Gran Sasso, INFN, Italy, September 19–23, 1993, edited by C. Arpesella, E. Bellotti and A. Bottino [Nucl. Phys. B (Proc. Suppl.) **35** (1994) 294–300].

65. M. Bocciolini, S. Bottai, A. M. Cartacci, L. Dell'Agnello, F. Grianti, B. Monteleoni, V. A. Naumov, M. Bonori, A. Capone, G. De Marchis, F. Massa, L. Piccari, E. Valente, and V. Valente, Proposal to INFN for an Italian participation to NESTOR (Neutrinos from Supernovae and TeV Ocean Range), INFN Report (Frascati, June 1994), 90 pp.

66. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by L. K. Resvanis), High energy neutrino astroparticle physics with NESTOR, in *Proceedings of the 3rd NESTOR International Workshop*, October 19–21, 1993, Fortress of Niokastro, Pylos, Greece, edited by L. K. Resvanis (Physics Laboratory of the Athens University, Athens, 1993), pp. 1–17.

67. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by G. Voulgaris), Data transmission for NESTOR, *ibid.*, pp. 334–341.

68. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by G. K. Fanourakis), Digital or analog transmission?, *ibid.*, pp. 343–352.

69. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by P. Pramantiotis), Electron-muon discrimination studies with NESTOR, *ibid.*, pp. 470–489.

70. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by C. Kourkoumelis), Atmospheric neutrino oscillations with NESTOR, *ibid.*, pp. 491–502.

71. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by S. Katsanevas), Long baseline neutrino oscillations with CERN, *ibid.*, pp. 504–522.

72. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by P. Hantzios), Celestial point sources for NESTOR, *ibid.*, pp. 523–539.

73. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by E. G. Anassontzis), The NESTOR site, $36^\circ\,37.5$ N, $21^\circ\,34.6$ E, *ibid.*, pp. 614–630.

74. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by S. Sotiriou), Number of produced and detected Cherenkov photons from a relativistic track in water, *ibid.*, pp. 632–644.

75. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by A. Capone), Status of the NESTOR project, in *Proceedings of the 25th International Cosmic Ray Conference*, Durban, South Africa, July 30 – August 6, 1997, edited by M. S. Potgieter, B. C. Raubenheimer, and D. J. van der Walt (Wesprint, Potchefstroom, Space Research Unit, 1997) Vol. **7**, pp. 49–52.

76. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by A. Capone), Data transmission for NESTOR telescope, *ibid.*, Vol. **7**, pp. 53–56.

77. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by S. Bottai), Perspectives for neutrino astrophysics with NESTOR, *ibid.*, Vol. **7**, pp. 57–60.

78. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by L. Trasatti), NESTOR: deep underwater neutrino astronomy, INFN, Laboratory Nazionaly di Frascati Preprint LNF-97/006-P (Frascati, 5 February, 1997) 6 pp. Presented at the *6th Topical Seminar on "Experimental Apparatus for Particle Physics and Astrophysics"*, San Miniato al Todesco, Italy, May 20–24 1996.

79. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by A. Capone), Status of NESTOR, a deep sea underwater neutrino telescope in the Mediterranean. Presented at the *16th International Workshop on "Weak Interaction and Neutrino"*, Capri, 1997.

80. The NESTOR Collaboration (E. Anassontzis, *et al.*), NESTOR. A deep sea underwater neutrino telescope for the Mediterranean, Università degli Studi di Firenze, Dipartimento di Fisica, Preprint DFF 283/07/1997 (Firenze, July, 1997), 8 pp. Presented at the *18th International Symposium on Lepton-Photon Interactions "LP-97"*, Hamburg, Germany, July 28 – August 1, 1997.

81. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by V. A. Naumov), The NESTOR project, in *Proceedings of the Baikal School on Fundamental Physics "Astrophysics and Microworld Physics"*, Irkutsk, Russia, October 11–17, 1998, edited by V. A. Naumov, Yu. V. Parfenov, and S. I. Sinegovsky, (Irkutsk State University, Irkutsk, 1998), pp. 105–114.

82. The NESTOR Collaboration (E. G. Anassontzis *et al.*), NESTOR: A neutrino astroparticle physics laboratory for the Mediterranean. Proposal. Part I: Scientific justification. (unpublished).

83. The NESTOR Collaboration (E. G. Anassontzis *et al.*), NESTOR: A neutrino astroparticle physics laboratory for the Mediterranean. Proposal. Part II: Technical description. (unpublished).

84. The NESTOR Collaboration (E. G. Anassontzis *et al.*, presented by S. Bottai), NESTOR: A status report, in Proceedings of the 26th International Cosmic Ray Conference, Salt Lake City, Utah, August 17–25, 1999, edited by D. Kieda *et al.* Vol. **2**, pp. 456–459.

4. Publications within the L3+Cosmics Group

85. The L3+Cosmics Group (I. Duran *et al.*), L3, A high precision cosmic ray muon spectrometer. A letter of intent., CERN Report (April, 1996), 30 pp.

86. The L3+Cosmics Group (J. Bähr *et al.*, presented by L. K. Ding), A new project using the detector of L3+COSMICS phase II, in *Proceedings of the 25th International Cosmic Ray Conference*, Durban, South Africa, July 30 – August 6, 1997, edited by M. S. Potgieter, B. C. Raubenheimer, and D. J. van der Walt (Wesprint, Potchefstroom, Space Research Unit, 1997) Vol. **7**, pp. 301–304.

87. The L3+Cosmics Group (J. Bähr *et al.*, presented by P. Le Coultre), L3, A new tool for cosmic ray muon research, *ibid.*, Vol. **7**, pp. 305–308.

88. The L3+Cosmics Group (J. Bähr *et al.*, presented by C. Timmermans), in Proceedings of the 26th International Cosmic Ray Conference, Salt Lake City, Utah, August 17–25, 1999, edited by D. Kieda *et al.* Vol. **2**, pp. 9–11.

5. Reports and Preprints

89. N. V. Ilyin, V. A. Naumov, and A. I. Orlov, Decays of neutral pseudoscalar mesons into a lepton pair and γ quantum in the vector dominance model, Siberian Institute of Terrestrial Magnetism, Ionosphere and Propagation of Radio Waves (Siberian Branch of the USSR Academy of Sciences), Preprint 11-80 (Irkutsk, 1980), 6 pp. (**in Russian**).

90. E. V. Bugaev and V. A. Naumov, Penetration of cosmic-ray nucleons through the atmosphere, Institute for Nuclear Research (USSR Academy of Sciences) Report П-0235 (Moscow, 1982), 15 pp. (**in Russian**).

91. E. V. Bugaev, V. A. Naumov, and S. I. Sinegovsky, Energy spectra and intensities of cosmic-ray muons at large depths, Institute for Nuclear Research (USSR Academy of Sciences) Report П-0347 (Moscow, 1984), 13 pp. (**in Russian**).

92. E. V. Bugaev and V. A. Naumov, Cosmic-ray nucleons in the atmosphere, Institute for Nuclear Research (USSR Academy of Sciences) Report П-0385 (Moscow, 1985), 28 pp. (**in Russian**).

93. E. V. Bugaev and V. A. Naumov, Geomagnetic effect and spectra of secondary cosmic nucleons, Institute for Nuclear Research (USSR Academy of Sciences) Report П-0401 (Moscow, 1985), 32 pp. (**in Russian**).

94. E. V. Bugaev and V. A. Naumov, Geomagnetic effect and spectra of cosmic-ray muons and neutrinos, Institute for Nuclear Research (USSR Academy of Sciences) Report П-0537 (Moscow, 1987), 35 pp. (**in Russian**).

95. E. V. Bugaev, V. A. Naumov, S. I. Sinegovsky, and E. S. Zaslavskaya, Prompt leptons in cosmic rays, Institute for Nuclear Research (USSR Academy of Sciences) Report П-0568 (Moscow, 1987), 32 pp. (**in Russian**).

96. E. S. Zaslavskaya and V. A. Naumov, Restrictions on fluxes of relativistic cosmic photinos from data of Kamiokande neutrino experiment, Research Institute of Nuclear Physics, Moscow State University, Preprint 90-37/183 (Moscow, 1990), 32 pp. (**in Russian**).

97. V. A. Naumov, Three-neutrino oscillations in matter and topological phases, Institute for Theoretical Physics (Ukrainian Academy of Sciences), Preprint ITP-91-34P (Kiev, 1991), 24 pp. (**in Russian**).

98. V. A. Naumov, Three-neutrino oscillations in matter, CP violation, and topological phases, National Laboratory for High Energy Physics (KEK) Preprint 91–176 (Tsukuba, December, 1991), 31 pp.

99. L. Dell'Agnello, B. Monteleoni, V. A. Naumov, and Tang Hong, On the possibility of detecting multiple production of gauge bosons induced by cosmic neutrinos using NESTOR, Università degli Studi di Firenze, Dipartimento di Fisica and Istituto Nazionale di Fisica Nucleare, Sezione di Firenze, Preprint DFF 178/12/1992 (Firenze, December, 1992), 7 pp.

100. V. A. Naumov, S. I. Sinegovsky, and E. V. Bugaev, High-energy cosmic-ray muons under thick layers of matter I. A method to solve the transport equation, Università degli Studi di Firenze, Dipartimento di Fisica and Istituto Nazionale di Fisica Nucleare, Sezione di Firenze, Preprint DFF 179/1/1993 (Firenze, January, 1993), 37 pp.

101. V. A. Naumov, Berry's phases for three-neutrino oscillations in matter, Università degli Studi di Firenze, Dipartimento di Fisica and Istituto Nazionale di Fisica Nucleare, Sezione di Firenze, Preprint DFF 190/09/1993 (Firenze, September, 1993), 12 pp.

102. E. V. Bugaev, V. A. Naumov, S. I. Sinegovsky, A. Misaki, N. Takahashi, and E. S. Zaslavskaya, Muon depth-intensity relation and data of underground and underwater experiments, Università degli Studi di Firenze, Dipartimento di Fisica and Istituto Nazionale di Fisica Nucleare, Sezione di Firenze, Preprint DFF 204/4/1994 (Firenze, April, 1994), 37 pp.

103. V. E. Kuznetsov and V. A. Naumov, Relationship between the Kobayashi-Maskawa and Chau-Keung presentations of the quark mixing matrix, Università degli Studi di Firenze, Dipartimento di Fisica and Istituto Nazionale di Fisica Nucleare, Sezione di Firenze, Preprint DFF 227/05/1995 (Firenze, May, 1995), 7 pp.

104. V. A. Naumov, A subject list towards the Baikal "KM3" proposal, Università degli Studi di Firenze, Dipartimento di Fisica, Preprint DFF 252/06/1996 (Firenze, June, 1996), 10 pp. [Invited talk at the Second Japanese–Russian Workshop on High Energy Neutrino Astrophysics "Future KM3 Muon & Neutrino Telescope in Lake Baikal", Irkutsk, Russia, December 21–24, 1995].

105. V. A. Naumov, T. S. Sinegovskaya, and S. I. Sinegovsky, $K_{\ell 3}$ form factors and atmospheric neutrino flavor ratio at high energies, Università degli Studi di Firenze, Dipartimento di Fisica, Preprint DFF 253/06/1996 (Firenze, June, 1996), 18 pp. (Talk at the 2nd Japanese–Russian Workshop on High Energy Neutrino Astrophysics "Future KM3 Muon & Neutrino Telescope in Lake Baikal", Irkutsk, Russia, December 21–24, 1995.)

106. V. A. Naumov and L. Perrone, Neutrino propagation through dense matter, Università degli Studi di Firenze, Dipartimento di Fisica, Preprint DFF 313/06/1998 (Firenze, June, 1998), 21 pp.

107. E. V. Bugaev, A. Misaki, V. A. Naumov, T. S. Sinegovskaya, S. I. Sinegovsky, and N. Takahashi, Cosmic-ray muons at sea level, underground, and underwater, Università degli Studi di Firenze, Dipartimento di Fisica, Preprint DFF 314/06/1998 (Firenze, June, 1998), 49 pp.

108. E. V. Bugaev, A. Misaki, V. A. Naumov, T. S. Sinegovskaya, S. I. Sinegovsky, and N. Takahashi, Atmospheric muon flux at sea level, underground, and underwater, National Graduate Institute for Policy Studies (GRIPS), Research Report Series I-98-0002 (Urawa, June, 1998), 49 pp.

109. C. Giunti, C. W. Kim, U. W. Lee, and V. A. Naumov, Implications of Super-Kamiokande atmospheric low-energy data for solar neutrino oscillations, Preprint KIAS-P98046, DFTT-70-98 (Seoul, February, 1999) 12 pp. [E-Print ArXiv: hep–ph/9902261 (February 7, 1999).]