

Statement of Research Interests for Wojciech Skulski, Ph.D

My experimental interests revolve around experimental nuclear and particle physics, detectors, sensors, and electronics. I enjoy hands-on investigations of detector response to different kinds of radiation, and performing experiments concerning pulse shape, data acquisition, and data processing in order to optimize the experimental results. I have accumulated about thirty years of hands-on experience with various kinds of Nuclear Physics detectors (silicon, germanium, and scintillation). I would like to apply this knowledge to my everyday research work.

I am an active LUX Collaboration member. Together with University of Rochester LUX Trigger Group I am developing an all-digital Trigger System for LUX, whose role is online selection of the candidate Dark Matter events in LUX. My primary role is development of the LUX Trigger electronics (the front-end digitizer and the Trigger Event Builder) based on flash ADC's and field programmable gate arrays (FPGA). The boards have achieved their required performance. I hope to continue my involvement with LUX, where my electronic designs are crucial for the success of the experiment.

For a number of years I used to participate in PHOBOS Collaboration at Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Lab. Since the PHOBOS experiment has been completed, my role has become dormant. I enjoyed my years spent with PHOBOS and I would welcome participation in another similar High Energy experiment.

Recently I have had an opportunity to develop an important adaptive optics project for the petawatt Omega-EP laser at the Laboratory for Laser Energetics, University of Rochester. I developed data acquisition from interferometer, image processing algorithms, as well as closed-loop feedback which controlled relative position of diffraction gratings to tens of nanometers for days. I would welcome an opportunity to develop similarly demanding adaptive optics systems in future.

I consider Homeland Security an important and fruitful application area of both the detectors and the electronics. I am very interested in contributing my skills to this very important subject.

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Education:

Warsaw University, Warsaw, Poland	Ph.D. 1990	Physics
Warsaw University, Warsaw, Poland	M.Sc. 1980	Physics

Positions held:

Senior Scientist	University of Rochester	2004 - 2009
Senior Research Associate	University of Rochester	2000 - 2004
Senior Scientist	X-Ray Instrumentation Assoc.	1998 - 2000
Research Associate	University of Rochester	1994 - 1998
Postdoctoral Fellow	Oak Ridge Nat'l Laboratory	1994
Postdoctoral Fellow	Lawrence Berkeley Nat'l Laboratory	1992 - 1994
Staff Physicist	Warsaw University	1984 - 1992
Staff Physicist	Soltan Institute for Nuclear Studies	1979 - 1984

Research Interests and Experience:

2006-2009 Dark Matter Search (LUX experiment). Designing high-precision analog front-end electronics, sampled data systems (flash A/D converters and FPGAs), digital signal processing for Dark Matter Search. High-precision pulse timing for pulsed laser sources for Omega and Omega-EP laser, high-precision capacitive proximity sensors for Tiled Grating Compressor for Omega-EP laser.

2004-2006 Developing algorithms and their implementations for Tiled Grating Compressor for Omega-EP laser at Laboratory for Laser Energetics (image acquisition, digital image processing, closed loop control of adaptive optics with piezoelectric actuators).

2003 Principal Investigator for the DOE SBIR grant "Digital Signal Processing Electronics for Nuclear Physics Applications", SkuTek Instrumentation.

2000 - 2004 Research in relativistic heavy-ion reactions at the Relativistic Heavy-Ion Collider at Brookhaven National Laboratory (PHOBOS Collaboration). Precision electronics for nuclear physics. Digital pulse processing, embedded processors, and signal processing with field-programmable gate arrays (FPGA).

1998 - 2000 Applications of digital spectroscopy to nuclear physics. Pulse-shape analysis, particle identification with scintillator detectors.

1994 - 1998 Nuclear reaction mechanisms in intermediate energy heavy-ion reactions. Nuclear multifragmentation, production mechanisms of intermediate mass fragments and heavy residues.

1992 - 1994 Mechanisms of intermediate mass fragment production in heavy ion collisions.

1979 - 1992 Nuclear reaction mechanisms in low and intermediate energy nuclear collisions. Particle and gamma-ray production mechanisms in light-ion induced reactions.

Recent Achievements.

- ✍ Design and construction of an 8-channel, 14-bit, 64 to 105 MSPS waveform digitizer and pulse processor DDC-8 DSP for underground astrophysics experiment searching for extraterrestrial Dark Matter particles (LUX Collaboration). In addition to serving the cutting-edge science, the instrument will also be used in advanced student labs at the University of Rochester.
- ✍ Design and construction of Trigger Event Builder for underground astrophysics experiment LUX. The device features a 500,000-gate FPGA, a USB-2 interface, and 8 incoming high-speed HDMI data links for eight front-end DDC digitizers. Both devices (the DDC-8 digitizer and the Trigger Event Builder) are being used to develop real-time digital trigger for LUX.
- ✍ Principal Investigator of a Time-to-Digital Converter (TDC) development, leading a team of electrical engineers developing a high-precision, networked time-to-digital converter monitoring relative timing of electronic pulses driving laser sources of the Omega and Omega EP lasers. The device delivers timing resolution better than 20 picoseconds. In addition to being a team leader, I also designed a high-precision analog front end for the TDC.
- ✍ Design and construction of a single-board computer (SBC) for high-performance networked instrumentation at LLE. The computer features a “convergent” Digital Signal Processor with memory protection unit and hardware video interface, running uCLinux and other similar operating systems, 64 MB of RAM, Ethernet, SPI, parallel, and serial interfaces, and a Complex Programmable Logic Device (CPLD). The SBC is used in the TDC instrument described above.
- ✍ Successful development of a closed-loop control for the prototype Tiled Grating Assembly at LLE. I developed the image acquisition from an interferometer, processing the image using Spatial Synchronous Phase Detection (SSPD, based on Fast Fourier Transform), and feeding the information back to piezoelectric actuators which controlled relative position of optics to tens of nanometers. I also developed data acquisition from temperature sensors as well as mechanical displacement gauges used to cross-check the interferometric algorithms. The success of this project was crucial for the development of the high-power Omega-EP laser at LLE.
- ✍ Invention disclosure to UofR Office of Technology Transfer: *Capacitive Sensor application to optics positioning*. I developed several novel types of capacitive sensors for high-precision optics positioning.
- ✍ Invention disclosure to UofR Office of Technology Transfer: *High Performance Digital Pulse Processing with Special Consideration for Timing*. The principal application of this invention was Positron Emission Tomography with time-of-flight capability (TOF-PET), where it would lead to improvement in cancer detection.
- ✍ Design and construction of several earlier digital pulse processors for physics education at the Dept. of Physics and Astronomy, University of Rochester.
- ✍ Design and construction of a precise programmable 16-channel logic delay unit with a 10 picosecond step size. The units were used at Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory to electronically align the timing pulses from Cerenkov detectors to perform precise on-line determination of the interaction vertex.
- ✍ My other technical skills include high-precision electronic design all the way from defining the instrument concept, designing the schematics, schematic capture, board design, and fabrication.
- ✍ I accumulated a few decades of experience with nuclear radiation detectors of all kinds (detecting gamma-rays, charged particles, and neutrons, using high-purity germanium, silicon, and scintillation counters of many different kinds).
- ✍ Author and co-author of over 100 research articles and scientific contributions.

Selected publications demonstrating research interests.

1. J. Bunkenburg, T.J. Kessler, W. Skulski, H. Huang. *Phase-locked control of tiled-grating assemblies for chirped-pulse-amplified lasers using a Mach-Zehnder interferometer*. Optics Letters 31, p.1561 (2006).
2. J. Bunkenburg, T. J. Kessler, L. Iwan, C. Kellogg, and W. Skulski. *Demonstration of Real-Time, Phase-Locked Alignment of Tiled Gratings for Chirped-Pulse-Amplified Lasers*. LLE Review, Volume 100 (2004), page 242.
3. W. Skulski, *Digital Signal Processing Electronics for Nuclear Physics Applications*, presented during GREINA Electronics Workshop, Argonne, 24-25 July 2004.
4. W. Skulski, *Experiment control and data acquisition using BlackBox Component Builder*, presented during CERN Oberon Day, 10 March 2004.
5. W. Skulski and F. Wolfs, *Eight-Channel Digital Signal Processor and Universal Trigger Module*, Spring APS meeting, April 2003, Philadelphia, PA.
6. S. Zuberi, W. Skulski, F. Wolfs, *Digital Signal Processing of Fast Scintillator Pulses*, an undergraduate research project of S. Zuberi at the Dept. of Physics and Astronomy, University of Rochester; Spring APS meeting, April 2003, Philadelphia, PA.
7. W. Skulski et al., *Particle identification in CsI(Tl) using digital pulse shape analysis*, Nucl. Instr. and Meth. A458 (2001) 759.
8. W. Skulski, et al., *Towards digital γ -ray and particle spectroscopy*, invited talk at the NATO Advanced Research Workshop, Krzyze, Poland (1999), Acta Physica Polonica B31 (2000) 47.

Other recent publications.

- 1) **R & D for Future Zeplin**. May 2007. 4pp. Nucl. Phys. Proc. Suppl. 173:164-167, 2007. R. Bisset, M.J. Carson, H. Chagani, D.B. Cline, E.J. Daw, T. Ferbel, J. Gao, Y.S. Gao, V.A. Kudryavtsev, P.K. Lightfoot, P. Majewski, J. Maxin, J. Miller, W.C. Ooi, M. Robinson, G. Salinas, U. Schroeder, J. Seifert, F. Sergiampietri, W. Skulski, P.F. Smith, N.J.C. Spooner, J. Toke, H. Wang, J.T. White, F. Wolfs, X. Yang
- 2) **Centrality and energy dependence of charged-particle multiplicities in heavy ion collisions in the context of elementary reactions**. By PHOBOS Collaboration (B.B. Back et al.). Aug 2006. 4pp. Published in Phys.Rev.C74:021902, 2006.
- 3) **New PHOBOS results on event-by-event fluctuations**. B. Alver et al. 2006. 6pp. International Symposium on Multiparticle Dynamics (ISMD 05), Kromeriz, Czech Republic, 9-15 Aug 2005. Published in AIP Conf. Proc. 828:5-10, 2006.
- 4) **Vertex reconstruction algorithms in the PHOBOS experiment at RHIC**. By the PHOBOS Collaboration (K. Wozniak et al.). Jun 2006. Workshop on Tracking in High Multiplicity Environments (TIME 05), Zurich, Switzerland, 3-7 Oct 2005. Published in Nucl.Instrum.Meth.A566:185-189, 2006.
- 5) **Charged particle multiplicity distributions from p + p to Au + Au collisions at RHIC**. By PHOBOS Collaboration (R.S. Hollis et al.). 2006. 5pp. 18th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions: Quark Matter 2005 (QM 2005), Budapest, Hungary, 4-9 Aug 2005. Published in Rom.Rep.Phys.58:37-41, 2006.
- 6) **Forward-backward multiplicity correlations in $s(\text{NN})^{1/2}=200\text{-GeV Au+Au collisions}$** . By PHOBOS Collaboration (B.B. Back et al.). Mar 2006. 5pp. Published in Phys.Rev.C74:011901, 2006.
- 7) **Energy dependence of directed flow over a wide range of pseudorapidity in Au + Au collisions at RHIC**. By PHOBOS Collaboration (B.B. Back et al.). Nov 2005. 5pp. Published in Phys.Rev.Lett.97:012301, 2006. e-Print: nucl-ex/0511045
- 8) **Correlations and fluctuations over a broad range in pseudorapidity using the PHOBOS detector**. By PHOBOS Collaboration (G.S.F. Stephens et al.). Oct 2005. 5pp. Published in Nucl.Phys.A774:639-642, 2006. e-Print: nucl-ex/0510066
- 9) **New results from the PHOBOS experiment**. By PHOBOS Collaboration (G. Roland et al.). Oct 2005. 16pp. Proceedings of 18th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions: Quark Matter 2005 (QM 2005), Budapest, Hungary, 4-9 Aug 2005. Published in Nucl.Phys.A774:113-128, 2006.
- 10) **ZEPLIN IV: A future large-scale liquid xenon dark matter detector**. M. Atac Y. Chen D.B. Cline T. Ferbel J. Gao U. Schroeder F. Sergiampietri W. Skulski P.F. Smith J. Toke H. Wang J.T. White F. Wolfs X. Yang . 2005. 5pp. 6th UCLA Symposium on Sources and Detection of Dark Matter and Dark Energy in the Universe, Marina del Rey, California, 18-20 Feb 2004. Published in New Astron.Rev.49:283-287, 2005.

Full list of 112 publications is attached starting on page 5.

Wojciech Skulski, list of articles and conference contributions from SPIRES database.

Prepared on June 30, 2009.

- 1) R & D for Future Zeplin. R. Bisset et al. May 2007. 4pp.
Published in Nucl.Phys.Proc.Suppl.173:164-167,2007. e-Print: arXiv:0705.2117 [astro-ph]
- 2) Centrality and energy dependence of charged-particle multiplicities in heavy ion collisions in the context of elementary reactions. By PHOBOS Collaboration (B.B. Back et al.). Aug 2006. 4pp.
Published in Phys.Rev.C74:021902,2006.
- 3) Vertex reconstruction algorithms in the PHOBOS experiment at RHIC.
By the PHOBOS Collaboration (K. Wozniak et al.). Jun 2006.
Presented at Workshop on Tracking in High Multiplicity Environments (TIME 05), Zurich, Switzerland, 3-7 Oct 2005. Published in Nucl.Instrum.Meth.A566:185-189,2006. e-Print: nucl-ex/0606016
- 4) Forward-backward multiplicity correlations in $s(NN)^{1/2} = 200$ -GeV Au + Au collisions. By PHOBOS Collaboration (B.B. Back et al.). Mar 2006. 5pp.
Published in Phys.Rev.C74:011901,2006. e-Print: nucl-ex/0603026
- 5) Charged particle multiplicity distributions from p + p to Au + Au collisions at RHIC.
By PHOBOS Collaboration (R.S. Hollis et al.). 2006. 5pp.
Prepared for 18th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions: Quark Matter 2005 (QM 2005), Budapest, Hungary, 4-9 Aug 2005. Published in Rom.Rep.Phys.58:37-41,2006.
- 6) New PHOBOS results on event-by-event fluctuations. B. Alver et al. 2006. 6pp.
Prepared for 35th International Symposium on Multiparticle Dynamics (ISMD 05), Kromeriz, Czech Republic, 9-15 Aug 2005.
Published in AIP Conf.Proc.828:5-10,2006. Also in *Kromeriz 2005, Multiparticle dynamics* 5-10
- 7) Particle production in nuclear collisions over a broad centrality range from the PHOBOS experiment. By PHOBOS Collaboration (B. Alver et al.). 2006.
Prepared for International Conference on Interconnection between High Energy Physics and Astroparticle Physics: From Colliders to Cosmic Rays, Prague, Czech Republic, 7-13 Sep 2005. Published in Czech.J.Phys.56:A39-A52,2006.
- 8) Energy dependence of directed flow over a wide range of pseudorapidity in Au + Au collisions at RHIC. By PHOBOS Collaboration (B.B. Back et al.). Nov 2005. 5pp.
Published in Phys.Rev.Lett.97:012301,2006. e-Print: nucl-ex/0511045
- 9) Systematic study of directed flow at RHIC energies.
By PHOBOS Collaboration (Alice C. Mignerey et al.). Oct 2005. 7pp.
Presented at 18th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions: Quark Matter 2005 (QM 2005), Budapest, Hungary, 4-9 Aug 2005.
Submitted to Nukleonika e-Print: nucl-ex/0510030
- 10) System size, energy and pseudorapidity dependence of directed and elliptic flow at RHIC. By PHOBOS Collaboration (S. Manly et al.). Oct 2005. 5pp.
Presented at 18th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions: Quark Matter 2005 (QM 2005), Budapest, Hungary, 4-9 Aug 2005.
Published in Nucl.Phys.A774:523-526,2006. e-Print: nucl-ex/0510031
- 11) Forward-backward multiplicity correlations in $s(NN)^{1/2} = 200$ -GeV Au + Au collisions. By PHOBOS Collaboration (Peter Steinberg et al.). Oct 2005. 5pp.
To appear in the proceedings of 18th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions: Quark Matter 2005 (QM 2005), Budapest, Hungary, 4-9 Aug 2005. Published in Nucl.Phys.A774:631-634,2006. e-Print: nucl-ex/0510036
- 12) Particle production at very low and intermediate transverse momenta in d + Au and Au + Au collisions. Adam Trzupek et al. Oct 2005. 5pp.

Presented at 18th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions: Quark Matter 2005 (QM 2005), Budapest, Hungary, 4-9 Aug 2005.

Published in Nucl.Phys.A774:469-472,2006. e-Print: nucl-ex/0510039

13) New results from the PHOBOS experiment.

By PHOBOS Collaboration (G. Roland et al.). Oct 2005. 16pp.

To appear in the proceedings of 18th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions: Quark Matter 2005 (QM 2005), Budapest, Hungary, 4-9 Aug 2005. Published in Nucl.Phys.A774:113-

128,2006. e-Print: nucl-ex/0510042

14) Correlations and fluctuations over a broad range in pseudorapidity using the PHOBOS detector. By

PHOBOS Collaboration (G.S.F. Stephans et al.). Oct 2005. 5pp.

Published in Nucl.Phys.A774:639-642,2006. e-Print: nucl-ex/0510066

15) Analysis of dynamic multiplicity fluctuations at PHOBOS.

By PHOBOS Collaboration (Zheng-wei Chai et al.). Sep 2005. 6pp.

To appear in the proceedings of MIT Workshop on Correlations and Fluctuations in Relativistic Nuclear Collisions, Cambridge, Massachusetts, 21-23 Apr 2005.

Published in J.Phys.Conf.Ser.27:128-133,2005. e-Print: nucl-ex/0509027

16) Comment on 'Quantum opacity, the RHIC HBT puzzle, and the chiral phase transition'. By PHOBOS Collaboration (B.B. Back et al.). Jun 2005. 2pp.

Submitted to Phys.Rev.Lett. e-Print: nucl-ex/0506008

17) Status of the ZEPLIN II experiment. G.J. Alner et al. 2005. 5pp.

Prepared for 6th UCLA Symposium on Sources and Detection of Dark Matter and Dark Energy in the Universe, Marina del Rey, California, 18-20 Feb 2004.

Published in New Astron.Rev.49:259-263,2005.

18) ZEPLIN IV: A future large-scale liquid xenon dark matter detector. M. Atac et al. 2005. 5pp.

Prepared for 6th UCLA Symposium on Sources and Detection of Dark Matter and Dark Energy in the Universe, Marina del Rey, California, 18-20 Feb 2004.

Published in New Astron.Rev.49:283-287,2005.

19) Ultra-relativistic Au + Au and d + Au collisions: Experimental studies by PHOBOS.

By PHOBOS Collaboration (B.B. Back et al.). 2005. 7pp.

Prepared for 8th Workshop on Nonperturbative Quantum Chromodynamics, Paris, France, 7-11 Jun 2004.

Published in Int.J.Mod.Phys.A20:4405-4411,2005.

20) Elliptic flow in Au + Au collisions at RHIC.

By PHOBOS Collaboration (B.B. Back et al.). Oct 2004. 7pp.

Presented at Hot Quarks 2004: Workshop for Young Scientists on the Physics of Ultrarelativistic Nucleus-Nucleus Collisions (HQ'04), Taos Valley, New Mexico, 18-24 Jul 2004. Published in J.Phys.G31:S41-

S48,2005. e-Print: nucl-ex/0410008

21) The PHOBOS perspective on discoveries at RHIC. B.B. Back et al. Oct 2004. 92pp.

PHOBOS White Paper on discoveries at RHIC. Published in Nucl.Phys.A757:28-101,2005.

e-Print: nucl-ex/0410022

22) Transverse momentum and rapidity dependence of HBT correlations in Au + Au collisions at $s(\text{NN})^{1/2} = 62.4\text{-GeV}$ and 200-GeV .

By PHOBOS Collaboration (B.B. Back et al.). Sep 2004. 6pp.

Published in Phys.Rev.C73:031901,2006. e-Print: nucl-ex/0409001

23) Charged antiparticle to particle ratios near midrapidity in p + p collisions at $s(\text{NN})^{1/2} = 200\text{-GeV}$.

By PHOBOS Collaboration (B.B. Back et al.). Sep 2004. 3pp.

Published in Phys.Rev.C71:021901,2005. e-Print: nucl-ex/0409003

- 24) Scaling of charged particle production in d + Au collisions at $s(NN)^{1/2} = 200$ -GeV. By PHOBOS Collaboration (B.B. Back et al.). Sep 2004. 5pp.
Published in Phys.Rev.C72:031901,2005. e-Print: nucl-ex/0409021
- 25) Centrality and pseudorapidity dependence of elliptic flow for charged hadrons in Au+Au collisions at $s(NN)^{1/2} = 200$ -GeV. By PHOBOS Collaboration (B.B. Back et al.). Jul 2004. 6pp.
Published in Phys.Rev.C72:051901,2005. e-Print: nucl-ex/0407012
- 26) Pseudorapidity dependence of charged hadron transverse momentum spectra in d+Au collisions at $s(NN)^{1/2} = 200$ GeV. By PHOBOS Collaboration (B.B. Back et al.). Jun 2004. 3pp.
Published in Phys.Rev.C70:061901,2004. e-Print: nucl-ex/0406017
- 27) Energy dependence of elliptic flow over a large pseudorapidity range in Au+Au collisions at RHIC. By PHOBOS Collaboration (B.B. Back et al.). Jun 2004. 5pp.
Published in Phys.Rev.Lett.94:122303,2005. e-Print: nucl-ex/0406021
- 28) Bulk observables in pp, dA and AA collisions at RHIC.
By PHOBOS Collaboration (David J. Hofman et al.). Jun 2004. 4pp.
To appear in the proceedings of 39th Rencontres de Moriond on QCD and High-Energy Hadronic Interactions, La Thuile, Italy, 28 Mar - 4 Apr 2004. e-Print: nucl-ex/0406026
- 29) Rapidity and $k(T)$ dependence of HBT correlations in Au+Au collisions at 200-GeV with PHOBOS.
By PHOBOS Collaboration (Burt Holzman et al.). Jun 2004. 5pp.
To appear in the proceedings of 17th International Conference on Ultra Relativistic Nucleus-Nucleus Collisions (Quark Matter 2004), Oakland, California, 11-17 Jan 2004.
Published in J.Phys.G30:S1049-S1052,2004. e-Print: nucl-ex/0406027
- 30) The Landscape of particle production: Results from PHOBOS.
By PHOBOS Collaboration (B.B. Back et al.). May 2004. 8pp.
Plenary talk at 17th International Conference on Ultra Relativistic Nucleus-Nucleus Collisions (Quark Matter 2004), Oakland, California, 11-17 Jan 2004.
Published in J.Phys.G30:S683-S692,2004. e-Print: nucl-ex/0405023
- 31) Collision geometry scaling of Au+Au pseudorapidity density from $s(NN)^{1/2} = 19.6$ -GeV to 200-GeV.
By PHOBOS Collaboration (B.B. Back et al.). May 2004. 5pp.
Published in Phys.Rev.C70:021902,2004. e-Print: nucl-ex/0405027
- 32) Collective flow with PHOBOS. By PHOBOS Collaboration (S. Manly et al.). May 2004. 6pp. Contributed to 20th Winter Workshop on Nuclear Dynamics, Trelawny Beach, Jamaica, 15-20 Mar 2004. Published in Acta Phys.Hung.A24:203-208,2005. e-Print: nucl-ex/0405029
- 33) Flow in Au + Au collisions at RHIC.
By PHOBOS Collaboration (Marguerite Belt Tonjes et al.). Mar 2004. 4pp.
To appear in the proceedings of 17th International Conference on Ultra Relativistic Nucleus-Nucleus Collisions (Quark Matter 2004), Oakland, California, 11-17 Jan 2004.
Published in J.Phys.G30:S1243-S1246,2004. e-Print: nucl-ex/0403025
- 34) Pseudorapidity distributions of charged particles in d + Au and p + p collisions at $s(NN)^{1/2} = 200$ -GeV. By PHOBOS Collaboration (Rachid Nouicer et al.). Mar 2004. 4pp. To appear in the proceedings of 17th International Conference on Ultra Relativistic Nucleus-Nucleus Collisions (Quark Matter 2004), Oakland, California, 11-17 Jan 2004.
Published in J.Phys.G30:S1133-S1138,2004. e-Print: nucl-ex/0403033
- 35) Particle production at very low transverse momenta in Au + Au collisions at $s(NN)^{1/2} = 200$ -GeV. By PHOBOS Collaboration (B.B. Back et al.). Jan 2004. 4pp. Published in Phys.Rev.C70:051901,2004. e-Print: nucl-ex/0401006
- 36) Strange hadron production at low transverse momenta.
By PHOBOS Collaboration (G.I. Veres et al.). 2004.

Prepared for 7th International Conference on Strangeness in Quark Matter (SQM 2003), Atlantic Beach, North Carolina, 12-17 Mar 2003. Published in J.Phys.G30:S93-S102,2004.

37) Results from the PHOBOS experiment at RHIC.

By PHOBOS Collaboration (M.B. Tonjes et al.). 2004. 4pp.

Prepared for 8th International Conference on Nucleus-Nucleus Collisions (NN 2003), Moscow, Russia, 17-21 Jun 2003. Published in Nucl.Phys.A734:61-64,2004.

38) First results on d + Au collisions from PHOBOS. B.B. Back et al. 2004. 3pp.

Published in AIP Conf.Proc.698:677-679,2004. Also in *New York 2003, Intersections of particle and nuclear physics* 677-679

39) Identified hadron spectra from PHOBOS.

By PHOBOS Collaboration (G.I. Veres et al.). 2004.

Prepared for 17th International Conference on Ultra Relativistic Nucleus-Nucleus Collisions (Quark Matter 2004), Oakland, California, 11-17 Jan 2004. Published in J.Phys.G30:S1143-S1147,2004.

40) Charged particle multiplicity fluctuations in Au + Au collisions at $s(NN)^{1/2} = 200$ -GeV. By PHOBOS Collaboration (K. Wozniak et al.). 2004.

Prepared for 17th International Conference on Ultra Relativistic Nucleus-Nucleus Collisions (Quark Matter 2004), Oakland, California, 11-17 Jan 2004. Published in J.Phys.G30:S1377-S1380,2004.

41) Low p(T) spectra of identified charged particles in $s(NN)^{1/2} = 200$ -GeV Au + Au collisions from PHOBOS experiment at RHIC. By PHOBOS Collaboration (B.B. Back et al.). 2004.

Prepared for International Europhysics Conference on High-Energy Physics (HEP 2003), Aachen, Germany, 17-23 Jul 2003. Published in Eur.Phys.J.C33:S600-S602,2004.

42) Recent results from PHOBOS at RHIC. B.B. Back et al. 2004. 4pp.

Prepared for 5th Latin American Symposium on Nuclear Physics, Santos, Brazil, 1-5 Sep 2003. Published in Braz.J.Phys.34:829-832,2004.

43) Evidence of final state suppression of high p(T) hadrons in Au + Au collisions using d + Au measurements at RHIC. By PHOBOS Collaboration (Rachid Nouicer et al.). Nov 2003. 3pp.

Contributed to International Europhysics Conference on High-Energy Physics (HEP 2003), Aachen, Germany, 17-23 Jul 2003. Published in Eur.Phys.J.C33:S606-S608,2004.

e-Print: nucl-ex/0311008

44) Pseudorapidity distribution of charged particles in d + Au collisions at $s(NN)^{1/2} = 200$ -GeV. By PHOBOS Collaboration (B.B. Back et al.). Nov 2003. 4pp.

Published in Phys.Rev.Lett.93:082301,2004. e-Print: nucl-ex/0311009

45) Centrality dependence of charged anti-particle to particle ratios near mid rapidity in d + Au collisions at $s(NN)^{1/2} = 200$ -GeV. By PHOBOS Collaboration (B.B. Back et al.). Sep 2003. 6pp. Published in Phys.Rev.C70:011901,2004. e-Print: nucl-ex/0309013

46) Centrality dependence of charged hadron transverse momentum spectra in d + Au collisions at $S(NN)^{1/2} = 200$ GeV. By PHOBOS Collaboration (B.B. Back et al.). Jun 2003. 5pp.

Published in Phys.Rev.Lett.91:072302,2003. e-Print: nucl-ex/0306025

47) Charged hadron transverse momentum distributions in au + au collisions at $(S(NN))^{1/2} = 200$ -GeV. By PHOBOS Collaboration (B.B. Back et al.). PHOBOS-02-03, Feb 2003. 5pp.

Published in Phys.Lett.B578:297-303,2004. e-Print: nucl-ex/0302015

48) Recent results from PHOBOS at RHIC. By PHOBOS Collaboration (Robert Pak et al.). Feb 2003. 4pp.

To appear in the proceedings of 16th International Conference on Particles and Nuclei (PANIC 02), Osaka, Japan, 30 Sep - 4 Oct 2002. Published in Nucl.Phys.A721:227-230,2003, Erratum-ibid.A733:352-354,2004.

e-Print: nucl-ex/0302031

- 49) Comparison of the total charged particle multiplicity in high-energy heavy ion collisions with e^+e^- and $p\bar{p}$ / $\bar{p}p$ data. By PHOBOS Collaboration (B.B. Back et al.). Jan 2003. 5pp.
Submitted to Phys.Rev.Lett. e-Print: nucl-ex/0301017
- 50) Survey of recent results from the PHOBOS experiment at RHIC.
By PHOBOS Collaboration (C. Roland et al.). 2003.
Prepared for Pan American Advanced Studies Institute on New States of Matter in Hadronic Interactions (PASI 2002), Campos do Jordao, Brazil, 7-18 Jan 2002.
Published in AIP Conf.Proc.631:349-357,2003. Also in *Sao Paulo 2002, New states of matter in hadronic interactions* 349-357
- 51) The PHOBOS detector at RHIC. By PHOBOS Collaboration (B.B. Back et al.). 2003. 21pp.
Published in Nucl.Instrum.Meth.A499:603-623,2003.
- 52) Charged hadron transverse momentum distributions in Au+Au collisions at $\sqrt{s} = 200$ -GeV. By PHOBOS Collaboration (Christof Roland et al.). Dec 2002. 4pp.
Contributed to 16th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions, Quark Matter 2002 (QM 2002), Nantes, France, 18-24 Jul 2002.
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