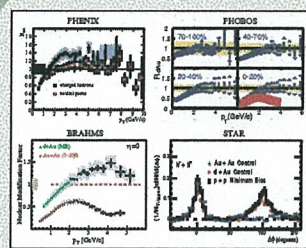


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VOLUME 88, NUMBER 2 PHYSICAL REVIEW LETTERS 14 JANUARY 2002

Energy Dependence of Particle Multiplicities in Central Au+Au Collisions

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We present the first measurement of the pseudorapidity distribution of primary charged particles in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV. For the most central collisions, we find the charged-particle pseudorapidity distribution to be broader and steeper than previously observed in nuclear collisions. Compared to proton-nucleus collisions, our data show an increase in the pseudorapidity density per participant by more than a factor of 2 at the highest energy.

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Charged hadron transverse momentum distributions in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV

B. B. Back, M. D. Baker, D. S. Barton, R. R. Betts, M. Ballintijn, A. A. Bickley, R. Bindek, A. Budzanowski, W. Busza, A. Carroll, M. P. Decowski, E. Garcia, J. Geurts, K. Gulbrandsen, S. Gushue, C. Halliwell, J. Hamblen, G. A. Heintzelman, C. Henderson, J. L. Khan, J. Kaur, J. Kaur, J. Kaur, W. Kuczewicz, P. Kulinski, C. M. Kuo, W. T. Lin, S. Manly, D. McLoud, J. Michalowski, A. Mignerey, J. Milonin, R. Nisius, A. Olszewski, R. Pak, J. C. Park, H. Pernegger, J. Sager, L. P. Remberg, M. Reuter, C. Roland, G. Roland, L. Rosenberg, J. Sager, P. Sarin, P. Sawicki, W. Skulski, G. S. Stephan, P. Steinberg, G. S. Stephan, A. Sukhanov, J. L. Tang, R. Teng, A. Trzpek, C. Vale, G. J. van Nieuwenhuizen, R. Verrier, B. Wadsworth, F. L. H. Wolfs, K. Wozniak, A. H. Wuosmaa, B. Wyslouch, and P. Zychowski

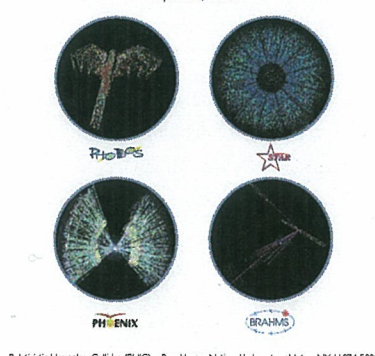
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Hunting the Quark Gluon Plasma

RESULTS FROM THE FIRST 3 YEARS AT RHIC
ASSESSMENTS BY THE EXPERIMENTAL COLLABORATIONS
April 18, 2005



Relativistic Heavy Ion Collider (RHIC) - Brookhaven National Laboratory Upton, NY 11974-5000

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The PHOBOS perspective on discoveries at RHIC

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Centrality Dependence of Charged-Hadron Transverse-Momentum Spectra in d+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV

B. B. Back, M. D. Baker, M. Ballintijn, D. S. Barton, R. R. Betts, A. A. Bickley, R. Bindek, A. Budzanowski, W. Busza, A. Carroll, M. P. Decowski, E. Garcia, C. Halliwell, J. Hamblen, C. Henderson, D. Hicks, D. Hofman, R. S. Holtz, R. Holyoak, B. Holzman, A. Jordanova, E. Johnson, J. L. Khan, J. Kaur, J. Kaur, W. Kuczewicz, P. Kulinski, C. M. Kuo, W. T. Lin, S. Manly, D. McLoud, J. Michalowski, A. Mignerey, R. Nisius, A. Olszewski, R. Pak, J. C. Park, H. Pernegger, C. Reed, L. P. Remberg, M. Reuter, C. Roland, G. Roland, L. Rosenberg, J. Sager, P. Sarin, P. Sawicki, W. Skulski, G. S. Stephan, P. Steinberg, G. S. Stephan, A. Sukhanov, J. L. Tang, R. Teng, A. Trzpek, C. Vale, G. J. van Nieuwenhuizen, R. Verrier, B. Wadsworth, F. L. H. Wolfs, K. Wozniak, A. H. Wuosmaa, B. Wyslouch, and J. Zhang

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We present measurements of the pseudorapidity distribution of primary charged particles in Au+Au collisions at three energies, $\sqrt{s_{NN}} = 136, 130,$ and 200 GeV for a range of collision centralities. The distribution narrows for the most central collisions and extends particle production to high pseudorapidity in peripheral collisions. For a given centrality, however, the distributions are found to scale with energy according to the "limiting fragmentation" hypothesis. The universal fragmentation region described by this scaling grows in pseudorapidity with increasing collision energy, extending well away from the beam rapidity and covering more than half of the pseudorapidity range over which particles are produced. This approach to a universal limiting state appears to be a dominant feature of the pseudorapidity distribution and therefore of the total particle production in these collisions.

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Significance of the Fragmentation Region in Ultrarelativistic Heavy-Ion Collisions

B. B. Back, M. D. Baker, D. S. Barton, R. R. Betts, A. A. Bickley, R. Bindek, A. Budzanowski, W. Busza, A. Carroll, M. P. Decowski, E. Garcia, C. Halliwell, J. Hamblen, C. Henderson, D. Hicks, D. Hofman, R. S. Holtz, R. Holyoak, B. Holzman, A. Jordanova, E. Johnson, J. L. Khan, J. Kaur, J. Kaur, W. Kuczewicz, P. Kulinski, C. M. Kuo, W. T. Lin, S. Manly, D. McLoud, J. Michalowski, A. C. Mignerey, R. Nisius, A. Olszewski, R. Pak, J. C. Park, H. Pernegger, C. Reed, L. P. Remberg, M. Reuter, C. Roland, G. Roland, L. Rosenberg, J. Sager, P. Sarin, P. Sawicki, W. Skulski, G. S. Stephan, P. Steinberg, G. S. Stephan, A. Sukhanov, J. L. Tang, R. Teng, A. Trzpek, C. Vale, G. J. van Nieuwenhuizen, R. Verrier, B. Wadsworth, F. L. H. Wolfs, K. Wozniak, A. H. Wuosmaa, B. Wyslouch, and J. Zhang

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Centrality dependence of the charged-particle multiplicity near midrapidity in Au+Au collisions at $\sqrt{s_{NN}} = 130$ and 200 GeV

B. B. Back, M. Ballintijn, M. D. Baker, D. S. Barton, R. R. Betts, A. A. Bickley, R. Bindek, A. Budzanowski, W. Busza, A. Carroll, M. P. Decowski, E. Garcia, C. Halliwell, J. Hamblen, C. Henderson, D. Hicks, D. Hofman, R. S. Holtz, R. Holyoak, B. Holzman, A. Jordanova, E. Johnson, J. L. Khan, J. Kaur, J. Kaur, W. Kuczewicz, P. Kulinski, C. M. Kuo, W. T. Lin, S. Manly, D. McLoud, J. Michalowski, A. Mignerey, J. Milonin, R. Nisius, A. Olszewski, R. Pak, J. C. Park, H. Pernegger, J. Sager, L. P. Remberg, M. Reuter, C. Roland, G. Roland, L. Rosenberg, J. Sager, P. Sarin, P. Sawicki, W. Skulski, G. S. Stephan, P. Steinberg, G. S. Stephan, A. Sukhanov, J. L. Tang, R. Teng, A. Trzpek, C. Vale, G. J. van Nieuwenhuizen, R. Verrier, B. Wadsworth, F. L. H. Wolfs, K. Wozniak, A. H. Wuosmaa, B. Wyslouch, and P. Zychowski

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Charged-particle Pseudorapidity-Density Distributions from Au+Au Collisions at $\sqrt{s_{NN}} = 130$ and 200 GeV

B. B. Back, M. D. Baker, D. S. Barton, R. R. Betts, A. A. Bickley, R. Bindek, A. Budzanowski, W. Busza, A. Carroll, M. P. Decowski, E. Garcia, C. Halliwell, J. Hamblen, C. Henderson, D. Hicks, D. Hofman, R. S. Holtz, R. Holyoak, B. Holzman, A. Jordanova, E. Johnson, J. L. Khan, J. Kaur, J. Kaur, W. Kuczewicz, P. Kulinski, C. M. Kuo, W. T. Lin, S. Manly, D. McLoud, J. Michalowski, A. Mignerey, J. Milonin, R. Nisius, A. Olszewski, R. Pak, J. C. Park, H. Pernegger, J. Sager, L. P. Remberg, M. Reuter, C. Roland, G. Roland, L. Rosenberg, J. Sager, P. Sarin, P. Sawicki, W. Skulski, G. S. Stephan, P. Steinberg, G. S. Stephan, A. Sukhanov, J. L. Tang, R. Teng, A. Trzpek, C. Vale, G. J. van Nieuwenhuizen, R. Verrier, B. Wadsworth, F. L. H. Wolfs, K. Wozniak, A. H. Wuosmaa, B. Wyslouch, and P. Zychowski

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