

JOURNAL PUBLICATIONS and CONFERENCE PROCEEDINGS

Keating, Shane R., L.J. Silvers and P.H. Diamond, "*On Cross-Phase and the Quenching of the Turbulent Diffusion of Magnetic Fields in Two Dimensions*," The Astrophys. J. 678, 2008 (678).

Gurcan, O.D. and P.H. Diamond and T.S. Hahm, "*Turbulent Equipartition and Homogenization of Plasma Angular Momentum*," Physical Review Letters 100, 2008 (135001).

Hahm, T.S., P.H. Diamond, O.D. Gurcan and G. Rewoldt, "*Response to 'Comment on 'Turbulent Equipartition Theory of Toroidal Momentum Pinch'*," [Phys. Plasmas 15, 2008 (055902)]
Submitted to Phys. Plasmas

Hahm, T.S., P.H. Diamond, O.D. Gurcan and G. Rewoldt, "*Turbulent Equipartition Theory of Toroidal Momentum Pinch*," Princeton Plasma Physics Laboratory Report PPPL-4285, (January 2008) 22 pp.; Phys. Plasmas 15, 2008 (055902).

Hinton, Fred L., "*Simulating Coulomb Collisions in a Magnetized Plasma*," Phys. Plasmas 15, 2008 (042501).

Oliker, Leonid, Andrew Canning, Jonathan Carter, John Shalf and Stephane Ethier, "*Scientific Application Performance on Leading Scalar and Vector Supercomputing Platforms*," The International Journal of High Performance Computing Applications 22, 5, 2008 (pp. 5-10).

Ethier, S., W.M. Tang, R. Walkup, L. Oliker, "*Large-Scale Gyrokinetic Particle Simulation of Microturbulence in Magnetically Confined Plasmas*," IBM Journal of Research and Development 52, 2008 (105).

Diamond, P.H., C.J. McDevitt, O.D. Gurcan, T.S. Hahm and V. Naulin, "*Transport of Parallel Momentum by Collisionless Drift Wave Turbulence*," Phys. Plasmas 15, 2008 (012303).

Keating, S.R. and P.H. Diamond, "*Turbulent Resistivity in Wavy Two-Dimensional Magnetohydrodynamic Turbulence*," J. of Fluid Mechanics 595, 2008 (173-202).

Nishimura, Y., Y. Xiao and Z. Lin, "*Guiding Center Orbit Studies in a Tokamak Edge Geometry Employing Boozer and Cartesian Coordinates*," Contributions Plasma Phys. 48, 2008 (224-228).

Lin, Z., I. Holod, L. Chen, P.H. Diamond, T.S. Hahm and S. Either, "*Wave-Particle Decorrelation and Transport of Anisotropic Turbulence in Collisionless Plasmas*," Physical Review Letters 99, 2007 (265003).

Lin, Z., Y. Nishimura, Y. Xiao, I. Holod, W. L. Zhang and L. Chen, "*Global Gyrokinetic Particle Simulations with Kinetic Electrons*," Plasma Phys. Contr. Fusion 49, 2007 (B163-B172).

Fujisawa, A., A. Shimizu, H. Nakano, S. Ohshima, K. Itoh, Y. Nagashima, S-I Itoh, H. Iguchi, Y. Yoshimura, T. Minami, K. Nagaoka, C. Takahashi, M. Kojima, S. Nishimura, M. Isobe, C. Suzuki, T. Akiyama, T. Ido, K. Matsuoka, S. Okamura and P.H. Diamond, "*Intermittent Characteristics in Coupling Between Turbulence and Zonal Flows*," Plasma Phys. Contr. Fusion Vol. 49, No. 3, March 2007 (211-217).

Rewoldt, G., Z. Lin and Y. Idomura, "*Linear Comparison of Gyrokinetic Codes with Trapped Electrons*," Princeton Plasma Physics Laboratory Report PPPL-4195, 2006 (8 pp.); *Comp. Phys. Commun.* 177, 2007 (775-780).

Adams, M.F., S. Ethier and N. Wichmann, "*Performance of Particle in Cell Methods on Highly Concurrent Computational Architectures*," *J. of Physics: Conf. Series* 78, 2007 (012001).

Garbet, X., Y. Sarazin, F. Imbeaux, P. Ghendrih, C. Bourdelle, O.D. Gurcan and P.H. Diamond, "*Front Propagation and Critical Gradient Transport Models*," *Phys. Plasmas* 14, 2007 (122305).

Keating, Shane R. and P.H. Diamond, "*Turbulent Diffusion of Magnetic Fields in Two-Dimensional Magnetohydrodynamic Turbulence with Stable Stratification*," *Physical Review Letters* 99(22), 2007 (224502).

Smolyakov, Andrei, Patrick Diamond, Masatoshi Yagi, Kimitaka Itoh and Sanae Itoh, "*Turbulent Stabilization of Neoclassical Tearing Modes*," *J. of the Physical Society of Japan*, Vol. 76 (11), 2007 (113501).

McDevitt, C.J. and P.H. Diamond, "*Low- q Resonances, Transport Barriers and Secondary Electrostatic Vortex Cells*," *Phys. Plasmas* 14(1) 2007 (112306).

Toda, S., K. Itoh, A. Fujisawa, S. Itoh, M. Yagi, A. Fukuyama, P.H. Diamond and K. Ida, "*Transport Analysis of the Effect of Zonal Flows on Electron Internal Transport Barriers in Toroidal Helical Plasmas*," *Nucl. Fusion* 47(8), 2007 (914-919).

Fujisawa, A., T. Ido, A. Shimizu, S. Okamura, K. Matsuoka, H. Iguchi, Y. Hamada, H. Nakano, S. Ohshima, K. Itoh, K. Hoshino, K. Shinohara, Y. Miura, Y. Nagashima, S.-I. Itoh, M. Shats, H. Xia, J.Q. Dong, L.W. Yan, K.J. Zhao, G.D. Conway, U. Stroth, A.V. Melnikov, L.G. Eliseev, S.E. Lysenko, S.V. Perfilov, C. Hidalgo, G.R. Tynan, C. Holland, P.H. Diamond, G.R. McKee, R.J. Fonck, D.K. Gupta and P.M. Schoch, "*Experimental Progress on Zonal Flow Physics in Toroidal Plasmas*," *Nucl. Fusion* 47, 2007 (S718-S726).

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Moskalenko, I. V., T.A. Porter, T. A., M.A. Malkov and P.H. Diamond, "Hadronic Gamma Rays from Supernova Remnants," Contribution to the 30th International Cosmic Ray Conference, Merida, Mexico, 2007 (eprint arXiv:0705.3854).

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Wang, W.X., T.S. Hahm, W. Lee, G. Rewoldt, J. Manickam and W.M. Tang, "Nonlocal Properties of Gyrokinetic Turbulence and the Role of ExB Flow Shear," Princeton Plasma Physics Laboratory Report PPPL-4236, 2007, (18 pp.); Phys. Plasmas 14, 2007 (072306).

Hahm, T.S., P.H. Diamond, O.D. Gurcan and G. Rewoldt, "Nonlinear Gyrokinetic Theory of Toroidal Momentum Pinch," Princeton Plasma Physics Laboratory Report PPPL-4230, 2007 (48 pp.); Phys. Plasmas 14, 2007 (072302).

Batchelor, D.A., M. Beck, A. Becoulet, R.V. Budny, C.S. Chang, P.H. Diamond, J.Q. Dong, G.Y. Fu, A. Fukuyama, T.S. Hahm, D.E. Keyes, Y. Kishimoto, S. Klasky, L.L. Lao, K. Li, Z. Lin, B. Ludaescher, J. Manickam, N. Nakajima, T. Ozeki, N. Podhorszki, W.M. Tang, M.a. Vouk, R.E. Waltz, S.J. Wang, H.r. Wilson, X.Q. Xu, M. Yagi and F. Zonca, "Simulation of Fusion Plasmas: Current Status and Future Direction," Plasma Science and Technology, Vol. 9, No. 3, 2007 (312-387).

Gurcan, O.D., P.H. Diamond, and T. S. Hahm. "Spatial and Spectral Evolution of Turbulence," Phys. Plasmas 14, 2007 (055902).

Gurcan, O.D., P.H. Diamond, T.S. Hahm and R. Singh, "Intrinsic Rotation and Electric Field Shear," Phys. Plasmas 14, 2007 (042306).

Itoh, K., A. Fujisawa, Y. Nagashima, S.-I. Itoh, M. Yagi, P.H. Diamond, A. Fukuyama, and K. Hallatschek, "On Imaging of Plasma Turbulence," Plasma and Fusion Research, Vol. 2, 2007 (S1003).

Oliker, L., A. Canning, J. Carter, C. Iancu, M. Lijewski, S. Kamil, J. Shalf, H. Shan, E. Strohmaier, S. Ethier and T. Goodale, "Scientific Application Performance on Candidate Petascale Platforms," In Proceedings IPDPS 2007, Long Beach, CA (2007) (**Best Paper Award**).

Malkov, M. A. and P.H. Diamond, "*Particle Acceleration and Turbulence in Cosmic Ray Shocks: Possible Pathways Beyond the Bohm Limit*," Turbulence and Nonlinear Processes in Astrophysical Plasmas, 6th Annual Astrophysics Conference, AIP Proceedings, Volume 932, 2007 (290-297).

Fujisawa, A., K. Itoh, A. Shimizu, H. Nakano, S. Ohshima, H. Iguchi, K. Matsuoka, S. Okamura, T. Minami, Y. Yoshimura, K. Nagaoka, K. Ida, K. Toi, C. Takahashi, M. Kojima, S. Nishimura, M. Isobe, C. Suzuki, T. Akiyama, Y. Nagashima, S.-I. Itoh and P.H. Diamond, "*Experimental Evidence of a Zonal Magnetic Field in a Toroidal Plasmas*," Physical Review Letters, Vol. 98, No. 16, 2007 (165001).

Fujisawa, A., A. Shimizu, H. Nakano, S. Ohshima, K. Itoh, Y. Nagashima, S.-I. Itoh, H. Iguchi, Y. Yoshimura, T. Minami, K. Nagaoka, C. Takahashi, M. Kojima, S. Nishimura, M. Isobe, C. Suzuki, T. Akiyama, T. Ido, K. Matsuoka, S. Okamura and P.H. Diamond, "*Causal Relationship Between Zonal Flow and Turbulence in a Toroidal Plasma*," J. of the Physical Society of Japan, Vol. 76, No. 3, 2007 (pp. 033501).

BOOK CONTRIBUTION

"**Petascale Computing: Algorithms and Applications**", Chapman & Hall/CRC Computational Sciences Series, David A. Bader Editor, Chapter 1: Performance Characteristics of Potential Petascale Scientific Applications, 2007.

TALKS

Malkov, M.A. and P. H. Diamond, "*Time Variability and Bifurcations of Cosmic Ray Acceleration at Shocks*," International Astroparticle Physics Symposium: The High Energy Frontier, Colorado School of Mines, Golden, CO, May 6-8, 2008.

Diamond, P.H. "*Momentum Theorems for Zonal Flows in DWT Multiscale Methods for Fluid and Plasma Turbulence Applications to Magnetically Confined Plasmas in Fusion Devices*," Invited Talk, International Workshop on Multiscale Methods For Fluids and Plasma Turbulence, Marseille, France, April 21-25, 2008.

Hahm, T.S., "*Gyrokinetic Description of Tokamak Core Turbulence: Theory, Simulations, and Comparisons to Experiments*," Invited Talk, International Workshop on Multiscale Methods For Fluids and Plasma Turbulence, Marseille, France, April 21-25 2008.

Diamond, P.H., "*Mechanisms of Edge-Core Coupling: Some Speculations on How SOL Flows Influence Intrinsic Rotation and the L-H Transition*," 21st U.S. Transport Task Force Workshop, Boulder, CO, March 25-28, 2008.

Diamond, P.H., "*Resonance Coherency, Transport Events and Spreading of CTEM Turbulence*," 21st U.S. Transport Task Force Workshop, Boulder, CO, March 25-28, 2008.

Malkov, M.A. and P.H. Diamond, "*Formation and Propagation of Transport Barriers in a Coupled Heat and Particle Flux Model*," 21st US Transport Taskforce Workshop, Boulder, CO, March 25-28, 2008.

Hinton, Fred L., "*Nonrandom Collision Method for Delta-f PIC Simulations*," 21st US Transport Taskforce Workshop, Boulder, CO, March 25-28, 2008.

Gurcan, O., "*Poloidal Reynolds Stress, and its Influence on Intrinsic Rotation/Momentum Transport*," 21st U.S. Transport Task Force Workshop, Boulder, CO, March 25-28, 2008.

McDevitt, C.M., "*Transport of Parallel Momentum by Collisionless Electromagnetic Turbulence*," 21st U.S. Transport Task Force Workshop, Boulder, CO, March 25-28, 2008.

Diamond, P.H., "*Physics and Modeling of Multi-Scale Interaction in Plasmas*," Invited Speaker, Kyoto University, Kyoto, Japan, March 3-4, 2008. (Unable to attend due to schedule conflicts)

Gurcan, O., "*Comment on Momentum Transport Physics - Theory Perspective*," Gyrokinetic Particle Simulation of Turbulent Transport in Burning Plasmas, La Jolla, CA, February 29-March 1, 2008.

McDevitt, C.J., "*Comment on Momentum Transport by ES and EM Waves*," Gyrokinetic Particle Simulation of Turbulent Transport in Burning Plasmas, La Jolla, CA, February 29-March 1, 2008.

Diamond, P.H., "*Comments on Dynamics of "Non-locality" in Transport*," Gyrokinetic Particle Simulation of Turbulent Transport in Burning Plasmas, La Jolla, CA, February 29-March 1, 2008.

Hinton, F., "*Developments in Zonal Flow Saturation Theory*," Gyrokinetic Particle Simulation of Turbulent Transport in Burning Plasmas, La Jolla, CA, February 29-March 1, 2008.

Diamond, P.H., "*Comments on Validation Issues*," Gyrokinetic Particle Simulation of Turbulent Transport in Burning Plasmas, La Jolla, CA, February 29-March 1, 2008.

Hahm, T.S., "*Recent Progress in Understanding Tokamak Core Turbulence and Transport*," Colloquium, Princeton Plasma Physics Laboratory, Princeton, NJ, January 2008.

Hahm, T.S., P.H. Diamond, O.D. Gurcan and G. Rewoldt, "*Turbulent Equipartition Theory of Toroidal Momentum Pinch*," Invited Talk, 49th American Physical Society Division of Plasma Physics Meeting, Orlando, FL, November 12-16, 2007.

Hinton, Fred L. and P.H. Diamond, "*Nonlinear Excitation and Damping of Zonal Flows Using a Renormalized Polarization Response*," 49th American Physical Society Division of Plasma Physics Meeting, Orlando, FL, November 12-16, 2007.

McDevitt, C.J., "*New Developments in Momentum Transport Bifurcation Phenomenology*," ITPA, Naka, Japan, October 1-3, 2007.

Hahm, T.S., P.H. Diamond, O.D. Gurcan, G. Rewoldt, and C. McDevitt, "*Theory of Turbulent Nondiffusive Momentum Transport*," Invited Talk, U.S.-Japan Joint Institute of Fusion Theory Workshop, Tokyo, Japan, September 2007.

Hahm, T.S., "*Summary of the 11-th IAEA Technical Meeting on H-mode and Transport Barriers*," Summary of Sessions on Spontaneous Rotation and Momentum Transport in Tokamak Plasmas and on Transport Barriers: Theory and Simulation, The 11th IAEA Technical Meeting on H-mode Physics and Transport Barriers, Tsukuba, Japan, September 26-28, 2007.

McDevitt, C.J., "*New Developments in Momentum Transport Bifurcation Phenomenology*," The 11th IAEA Technical Meeting on H-mode and Transport Barriers, Tsukuba, Japan, September 26-28, 2007.

Diamond, P.H., "*Introduction to Transport Barriers and Related Mesoscale Phenomena*," Festival de Theorie 2007, Aix-en-Provence, France, July 2-20, 2007.

Diamond, P.H., "*Theory of Turbulent Transport of Toroidal Momentum - Some New Thoughts on an Old Problem*," Festival de Theorie 2007, Aix-en-Provence, France, July 2-20, 2007.

Diamond, P.H., "*The Plasma Physics of Diffusive Shock Acceleration Beyond the Bohm Limit*," The First Asian Pacific Symposium on Astrophysical, Space and Laboratory Plasmas, Beijing, China, June 16-20, 2007.

Diamond, P.H., "*Physics of Drift Wave - Zonal Flow Turbulence in Confined Plasmas*," The First Asian Pacific Symposium on Astrophysical, Space and Laboratory Plasmas, Beijing, China, June 16-20, 2007.

Diamond, P.H., "*Turbulence in Diffuse Astrophysical Environments*," Invited Speaker, American Astronomical Society 210th Meeting, Honolulu, HI, May 2007 (Unable to attend due to schedule conflicts)

Diamond, P.H., "*Momentum Transport Working Group*," 12th US-EU Transport Task Force Meeting, San Diego, CA, April 17-20, 2007.

Diamond, P.H., "*Physics of Intrinsic Rotation and Transport of Toroidal Momentum: A Resonant Particle - Quasi-Particle Approach*," 12th US-EU Transport Task Force Meeting, San Diego, CA, April 17-20, 2007.

Diamond, P.H., "*Issues in Transport and Confinement Physics for ITER*," Invited Speaker, 3rd IAEA Technical Meeting on the Theory of Plasma Instabilities, York, United Kingdom, March 26-28, 2007.