

## CURRICULUM VITAE

Sergey KRAVCHENKO

Physics Department  
Northeastern University  
Boston, MA 02115, U.S.A.

Tel.: +1 617 373 2926  
Fax: +1 617 373 2943  
e-mail: s.kravchenko@northeastern.edu

### EDUCATION:

1982 M.Sc. Moscow Institute of Physics and Technology, Russia  
1988 Ph.D. Institute of Solid State Physics, Chernogolovka, Russia

### POSITIONS HELD:

1998-present Professor, Physics Department, Northeastern University, U.S.A.  
1995-1998 Research Professor, Physics Department, City College of the City University of New York, U.S.A.  
1993-1995 Research Scientist and Visiting Assistant Professor, University of Oklahoma, U.S.A.  
1992-1993 SERC Research Fellow, Physics Department, University of Nottingham, United Kingdom  
1991-1992 Senior scientist, Institute for High Pressure Physics, Troitsk, Russia  
1988-1991 Research Associate, Institute of Metrological Service, Moscow, Russia  
1982-1988 Junior research fellow, All-Union Electro-technical Institute, Moscow, Russia  
1981-1982 Diploma student, Kapitza Institute for Physical Problems, Moscow, Russia

### MAIN RESEARCH ACCOMPLISHMENTS:

2004 Discovery of a strongly enhanced spin susceptibility near the metal-insulator transition in two dimensions  
1994 Discovery of the metal-insulator transition in a strongly correlated two-dimensional electron system  
1989 Discovery of the negative thermodynamic compressibility in a strongly interacting two-dimensional electron system

### MEDIA COVERAGE:

- *Science Daily* August 10 (2007) "Long-standing Question In The Field Of Condensed Matter Physics Answered"
- *Nature Phys.* **3**, 370 (2007) "News and Views: Metal-insulator transition: A plane mystery"
- *Nature* **424**, 1015 (2003) "Progress: Electric field effect in correlated oxide systems"
- *Science* **288**, 229 (2000) "Editors' Choice: Highlights of the recent literature"
- *American Physical Society Timeline* (1999) "A Century of Mesoscopic Physics (1899-1999)"
- *Nature* **400**, 715 (1999) "News and Views: Real metals, 2D or not 2D?"
- *Science* **282**, 221 (1998) "Physics: How Matter Can Melt at Absolute Zero"
- *Nature* **389**, 916 (1998) "News and Views: Another surprise from two dimensions"
- *The Economist* (July 1997) "Science and Technology: Silicon Waves"
- *Physics Today* (July 1997) "Search and Discovery: Metal-Insulator Transition Unexpectedly Appears in a Two-Dimensional Electron System"
- *Physics Today* (February 1997) "Search and Discovery: In a quantum Hall system, is the insulator really a conductor in vortex clothing?"

**PUBLICATIONS:** 100+ papers in refereed journals (list attached)

## HONORS AND AWARDS:

|           |  |
|-----------|--|
| 2008-     | Fellow of the American Physical Society                    |
| 1999-2003 | Sloan Fellow   |
| 1997      | New York Academy of Sciences “Certificate of Appreciation” |
| 1992-1993 | University Fellow, Nottingham University, United Kingdom   |
| 1992      | Royal Society Fellowship                                   |
| 1992      | U.K. Science and Engineering Research Council Fellowship   |
| 1991      | Japan Society for the Promotion of Science Fellowship      |

## INVITED TALKS ON INTERNATIONAL CONFERENCES (last decade):

### 2017:

- Condensed Matter Physics 2017, New York, USA
- EMN Quantum Summit, Chengdu, China
- 3rd International Conference on Physics, Brussels, Belgium

### 2016:

- EMN Meeting on Quantum Matter, Port Louis, Mauritius
- International Workshop on Anderson Localization in Topological Insulators, Daejeon, South Korea
- International Workshop on Recent Progress and Perspectives in Topological Insulators: Quantum Hall Effects, Ballistic vs. Diffusive Regimes and Anderson Transitions, Beijing, China

### 2015:

- International Conference on Delocalization Transitions in Disordered Systems, Pohang, South Korea
- International Workshop: Localization, Interactions, and Superconductivity, Landau Institute for Theoretical Physics, Chernogolovka, Russia

### 2013:

- International Conference on Disorder and correlations in quantum systems, Rome, Italy
- International Workshop on Bad Metal Behavior and Mott Quantum Criticality, Pohang, South Korea

### 2011:

- 1st Annual World Congress of Nano-Science & Technology, Dalian, China
- International Workshop on Nanophysics, Larnaca, Cyprus

### 2008:

- International Workshop on Disorder and Interactions in Low Dimensions “50 years of Anderson Localization”, Columbus, Ohio
- International Conference on Strongly Coupled Coulomb Systems, Camerino, Italy
- XXXII International Workshop on Condensed Matter Theories, Loughborough, United Kingdom
- International Workshop on Correlated Electron Systems in High Magnetic Fields, Dresden, Germany

### 2007:

- International Workshop on Disorder in Condensed Matter Systems and Cold Atoms, Leiden, The Netherlands
- International Conference on Coherence and Incoherence in Strongly Correlated Systems, Rome, Italy
- International Workshop on Interplay Between Interactions and Disorder, Hsinchu, Taiwan
- International Conference on Nanoelectronics, Nanostructures and Carrier Interactions (NNCI2007), Atsugi, Japan

## PUBLICATIONS (in reverse chronological order)

### Book:

“Strongly Correlated Electrons in Two Dimensions”, ed. by S. V. Kravchenko (Pan Stanford Publishing, 2016).

### Review Articles and Book Chapters:

A. A. Shashkin and S. V. Kravchenko “Metal-insulator transition in a strongly-correlated two-dimensional electron system”, in: “Strongly Correlated Electrons in Two Dimensions”, ed. by S. V. Kravchenko (Pan Stanford Publishing, 2016).

S. V. Kravchenko “Metal-Insulator Transitions in Two-dimensional Electron Systems”, in: “Conductor-Insulator Quantum Phase Transitions” ed. by V. Dobrosavljević, N. Trivedi, and J. M. Valles, Jr. (Oxford University Press, 2012).

S. V. Kravchenko and M. P. Sarachik “A metal-insulator transition in 2D: Established facts and open questions”, in: “50 Years of Anderson Localization” ed. by E. Abrahams (World Scientific Publishing Co., 2010).

A. A. Shashkin and S. V. Kravchenko “Quantum phase transitions in two-dimensional electron systems”, in: “Understanding Quantum Phase Transitions” ed. by Lincoln D. Carr (Taylor & Francis, Boca Raton, 2010).

B. Spivak, S. V. Kravchenko, S. A. Kivelson, and X. P. A. Gao “Transport in strongly correlated two-dimensional electron fluids” *Rev. Mod. Phys.* **82**, 1743 (2010).

S. V. Kravchenko and M. P. Sarachik “Metal-insulator transition in two-dimensional electron systems” *Rep. Prog. Phys.* **67**, 1 (2004).

E. Abrahams, S. V. Kravchenko, and M. P. Sarachik “Metallic behavior and related phenomena in two dimensions” *Rev. Mod. Phys.* **73**, 251 (2001).

M. P. Sarachik and S. V. Kravchenko “Novel Phenomena in Dilute Electron Systems in Two Dimensions” *Proc. Natl. Acad. Sci. USA* **96**, 5900 (1999).

### Letters, Research Articles, and Conference Proceedings:

105. P. Brussarski, S. Li, S. V. Kravchenko, A. A. Shashkin, and M. P. Sarachik, “Collective motion of electrons in a strongly interacting 2D electron system”, preprint arXiv:1704.04479 (submitted to *Nat. Communications*, 2018).

104. M. Y. Melnikov, A. A. Shashkin, V. T. Dolgoplov, S.-H. Huang, C. W. Liu, and S. V. Kravchenko, “Unusual anisotropy of inplane field magnetoresistance in ultra-high mobility SiGe/Si/SiGe quantum wells”, *J. Appl. Phys.* **122**, 224301 (2017).

103. M. Y. Melnikov, A. A. Shashkin, V. T. Dolgoplov, S.-H. Huang, C. W. Liu, and S. V. Kravchenko, “Indication of band flattening at the Fermi level in a strongly correlated electron system”, *Sci. Rep.* **7**, 14539 (2017).

102. V. T. Dolgoplov, A. A. Shashkin, and S. V. Kravchenko, “Spin polarization and exchange-correlation effects in transport properties of two-dimensional electron systems in silicon”, *Phys. Rev. B* **96**, 075307 (2017).

101. M. Y. Melnikov, A. A. Shashkin, V. T. Dolgoplov, S.-H. Huang, C. W. Liu, and S. V. Kravchenko, “Ultra-high mobility two-dimensional electron gas in a SiGe/Si/SiGe quantum well”, *Appl. Phys. Lett.* **106**, 092102 (2015).

100. M. Y. Melnikov, A. A. Shashkin, V. T. Dolgoplov, S. V. Kravchenko, S.-H. Huang, and C. W. Liu “Effective electron mass in high-mobility SiGe/Si/SiGe quantum wells”, *JETP Lett.* **100**, 114 (2014).

99. D. I. Golosov, I. Shlimak, A. Butenko, K.-J. Friedland, and S. V. Kravchenko “Resistance asymmetry of a two-dimensional electron gas caused by an effective spin injection”, *Phys. Rev. B* **88**, 155313 (2013).

98. A. Mokashi, S. Li, B. Wen, S. V. Kravchenko, A. A. Shashkin, V. T. Dolgoplov, and M. P. Sarachik “Critical Behavior of a Strongly Interacting 2D Electron System”, *Phys. Rev. Lett.* **109**, 096405 (2012).

97. I. Shlimak, A. Butenko, D. I. Golosov, K.-J. Friedland, and S. V. Kravchenko “Influence of spin polarization on resistivity of a two-dimensional electron gas in Si MOSFET at metallic densities”, *Europhys. Lett.* **97**, 37002 (2012).

96. A. Punnoose, A. M. Finkelstein, A. Mokashi, and S. V. Kravchenko “Test of scaling theory in two dimensions in the presence of valley splitting and intervalley scattering in Si-MOSFETs”, *Phys. Rev. B* **82**,

201308(R) (2009).

95. S. V. Kravchenko "Effects of Electron-Electron Interactions in Two Dimensions", *Int. Journal of Mod. Phys. B* **23**, 4186 (2009).

94. I. Shlimak, D. I. Golosov, A. Butenko, K.-J. Friedland, and S. V. Kravchenko "Conductance asymmetry of a slot gate Si-MOSFET in a strong parallel magnetic field", *Ann. Phys. (Berlin)* **18**, 913 (2009).

93. A. A. Shashkin, A. A. Kapustin, E. V. Deviatov, V. T. Dolgoplov, Z. D. Kvon, and S. V. Kravchenko "Effects of Interactions in Two Dimensions", a solicited review for *J. Phys. A: Math. Theor.* **42**, 214010 (2009).

92. I. Shlimak, V. Ginodman, A. Butenko, K.-J. Friedland, and S. V. Kravchenko "Electron transport in a slot-gate Si MOSFET" *Europhys. Lett.* **82**, 47001 (2008).

91. S. Anissimova, S. V. Kravchenko, A. Punnoose, A. M. Finkel'stein, and T. M. Klapwijk "Flow diagram of the metal-insulator transition in two dimensions" *Nature Phys.* **3**, 707 (2007).

90. S. V. Kravchenko "Effects of Interactions and Disorder in Two Dimensions" *Solid State Commun.* **144**, 512 (2007).

89. S. Anissimova and S. V. Kravchenko "Interplay between disorder and interactions in two dimensions" *Physica E* **40**, 50 (2007).

88. S. V. Kravchenko, A. A. Shashkin, S. Anissimova, A. Venkatesan, M. R. Sakr, V. T. Dolgoplov, and T. M. Klapwijk "Thermodynamic magnetization of a strongly correlated two-dimensional electron system" *Ann. Phys.* **321**, 1588 (2006).

87. S. Anissimova, A. Venkatesan, M. R. Sakr, A. A. Shashkin, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk "Critical behavior of the Pauli spin susceptibility of strongly correlated electrons in two dimensions" *Phil. Mag.* **86**, 2761 (2006).

86. I. Shlimak, V. Ginodman, K.-J. Friedland, and S. V. Kravchenko "Manifestation of the exchange enhancement of valley splitting in the quantum Hall effect regime" *Phys. Rev. B* **73**, 205324 (2006).

85. A. A. Shashkin, E. V. Deviatov, V. T. Dolgoplov, A. A. Kapustin, S. Anissimova, A. Venkatesan, S. V. Kravchenko, and T. M. Klapwijk "Conductivity of a spin-polarized two-dimensional electron liquid in the ballistic regime" *Phys. Rev. B* **73**, 115420 (2006).

84. S. Anissimova, A. Venkatesan, A. A. Shashkin, M. R. Sakr, S. V. Kravchenko, and T. M. Klapwijk "Magnetization of a strongly interacting two-dimensional electron system in perpendicular magnetic fields" *Phys. Rev. Lett.* **96**, 046409 (2006).

83. A. A. Shashkin, S. Anissimova, M. R. Sakr, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk "Pauli spin susceptibility of a strongly correlated 2D electron liquid" *Phys. Rev. Lett.* **96**, 036403 (2006).

82. A. A. Shashkin, V. T. Dolgoplov, and S. V. Kravchenko "Comment on 'Interaction Effects in Conductivity of Si Inversion Layers at Intermediate Temperatures'" *Phys. Rev. Lett.* **93**, 269705 (2004).

81. A. A. Shashkin, S. Anissimova, M. R. Sakr, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk "Critical behavior of the Pauli spin susceptibility in a strongly correlated 2D electron liquid" *HAIT Journal of Science and Engineering* **1**, 508 (2004).

80. M. P. Sarachik and S. V. Kravchenko "Novel phenomena in dilute electron systems in two dimensions" *Eur. Phys. J. B* **40**, 397 (2004).

79. A. A. Shashkin, Maryam Rahimi, S. Anissimova, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk "Sharply increasing spin susceptibility near the metalinsulator transition in a two-dimensional electron system" *J. Magn. Magn. Mater.* **272-276**, Supplement 1, E127 (2004).

78. A. A. Shashkin, Maryam Rahimi, S. Anissimova, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk "Sharply increasing effective mass near the 2D metalinsulator transition" *Physica E* **22**, 224 (2004).

77. M. Rahimi, S. Anissimova, M. R. Sakr, S. V. Kravchenko, and T. M. Klapwijk "Coherent back-scattering near the two-dimensional metal-insulator transition" *Phys. Rev. Lett.* **91**, 116402 (2003).

76. A. A. Shashkin, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk "Sharply increasing effective mass: a precursor of a spontaneous spin polarization in a dilute two-dimensional electron system" *J. Phys. A: Math. Gen.* **36**, 9237 (2003).

75. A. A. Shashkin, Maryam Rahimi, S. Anissimova, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk "Spin-independent origin of the strongly enhanced effective mass in a dilute 2D electron system" *Phys. Rev. Lett.* **91**, 046403 (2003).

74. M. Rahimi, M. R. Sakr, S. V. Kravchenko, S. C. Dultz, and H. W. Jiang "Compressibility of a two-dimensional hole gas in tilted magnetic field" *Phys. Rev. B* **67**, 081302(R) (2003).

73. S. V. Kravchenko, A. A. Shashkin, and V. T. Dolgoplov "Comment on 'Low-Density Spin Susceptibility and Effective Mass of Mobile Electrons in Si Inversion Layers'" *Phys. Rev. Lett.* **89**, 219701 (2002).

72. A. A. Shashkin, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk “Sharp increase of the effective mass near the critical density in a metallic 2D electron system” *Phys. Rev. B* **66**, 073303 (2002).
71. A. A. Shashkin, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk “Possible ferromagnetic instability in a dilute 2D electron system” *Physica E* **12**, 624 (2002).
70. M. R. Sakr, M. Rahimi, and S. V. Kravchenko “Fate of the extended states in a vanishing magnetic field: the role of spins in strongly-interacting 2D electron systems” *Phys. Rev. B* **65**, 041303(R) (2002).
69. A. A. Shashkin, S. V. Kravchenko, and T. M. Klapwijk “Metal-insulator transition in 2D: equivalence of two approaches for determining the critical point” *Phys. Rev. Lett.* **87**, 266402 (2001).
68. M. R. Sakr, M. Rahimi, S. V. Kravchenko, P. T. Coleridge, R. L. Williams, and J. Lapointe “Forbidden’ transitions between quantum Hall and insulating phases in p-SiGe heterostructures” *Phys. Rev. B* **64**, 161308(R) (2001).
67. A. A. Shashkin, S. V. Kravchenko, V. T. Dolgoplov, and T. M. Klapwijk “Indication of the ferromagnetic instability in a dilute two-dimensional electron system” *Phys. Rev. Lett.* **87**, 086801 (2001).
66. S. V. Kravchenko, A. A. Shashkin, David A. Bloore, and T. M. Klapwijk “Shubnikov-de Haas oscillations near the metal-insulator transition in a two-dimensional electron system in silicon” *Solid State Commun.* **116**, 495 (2000).
65. S. V. Kravchenko and T. M. Klapwijk “Metallic Low-Temperature Resistivity in a 2D Electron System Over an Extended Temperature Range” *Phys. Rev. Lett.* **84**, 2909 (2000) (see related article in *Science* April 14 2000, **288**: 229 “Editors’ Choice: Highlights of the recent literature”)
64. M. P. Sarachik, D. Simonian, K. M. Mertes, S. V. Kravchenko, and T. M. Klapwijk “Hall coefficient of the 2D electron system in silicon MOSFETs” *Physica B* **280**, 301 (2000).
63. M. P. Sarachik and S. V. Kravchenko “New Phenomena in Dilute 2D Electron Systems” *Phys. Stat. Sol.* (b) **218**, 237 (2000).
62. S. V. Kravchenko, M. P. Sarachik, and D. Simonian “Comment on ‘Theory of metal-insulator transitions in gated semiconductors’” *Phys. Rev. Lett.* **83**, 2091 (1999).
61. Philip Phillips, Subir Sachdev, S. V. Kravchenko, and Ali Yazdani “Quantum Conductors in a Plane” *Proc. Natl. Acad. Sci. USA* **96**, 9983 (1999).
60. K. M. Mertes, D. Simonian, M. P. Sarachik, S. V. Kravchenko, and T. M. Klapwijk “Response to Parallel Magnetic Field of a Dilute 2D Electron System across the Metal-Insulator Transition” *Phys. Rev. B* **60**, R5093(1999).
59. S. Bogdanovich, D. Simonian, S. V. Kravchenko, M. P. Sarachik, and R. N. Bhatt “Hopping conduction in uniaxially stressed Si:B neat the insulator-metal transition” *Phys. Rev. B* **60**, 2286 (1999).
58. S. V. Kravchenko, D. Simonian, K. Mertes, M. P. Sarachik, and T. M. Klapwijk “Classical versus Quantum Effects in the  $B=0$  Conducting Phase in Two Dimensions” *Phys. Rev. B* **59**, R12740 (1999).
57. S. V. Kravchenko “Metal-insulator transition in two dimensions” *Brazilian Journal of Physics* **29**, 623 (1999).
56. M. P. Sarachik, S. V. Kravchenko, D. Simonian, and V. M. Pudalov “An unexpected conducting phase in two dimensions” *Physica A* **263**, 208 (1999) .
55. S. V. Kravchenko, D. Simonian, and M. P. Sarachik “Comment on ‘Charged impurity scattering limited low temperature resistivity of low density silicon inversion layers’” preprint cond-mat/9812216.
54. M. P. Sarachik, D. Simonian, S. V. Kravchenko, S. Bogdanovich, V. Dobrosavljevic, and G. Kotliar “Metal-insulator transition in Si:X (X = P,B): Anomalous response to a magnetic field” *Phys. Rev. B* **58**, 6692 (1998).
53. S. V. Kravchenko, D. Simonian, M. P. Sarachik, A. D. Kent, V. M. Pudalov “Effect of Tilted Magnetic Field on the Anomalous  $H=0$  Conducting Phase in High-Mobility Si MOSFETs” *Phys. Rev. B* **58**, 3553 (1998).
52. D. Simonian, S. V. Kravchenko, K. M. Mertes, M. P. Sarachik, and V. M. Pudalov “Magnetoconductance of the anomalous 2D conducting phase in parallel field” *Physica B* **256-258**, 607 (1998).
51. S. V. Kravchenko, in: *Phil. Trans. R. Soc. Lond. A* **356**, 155 (1998).
50. D. Simonian, S. V. Kravchenko, M. P. Sarachik, and V. M. Pudalov “ $H/T$  scaling of the magnetoconductance in two dimensions near the conductor-insulator transition” *Phys. Rev. B* **57**, R9420 (1998).
49. D. Simonian, S. V. Kravchenko, M. P. Sarachik, and V. M. Pudalov “Magnetic field suppression of the conducting phase in two dimensions” *Phys. Rev. Lett.* **79**, 2304 (1997).
48. D. Simonian, S. V. Kravchenko, and M. P. Sarachik “Reflection symmetry at a  $B = 0$  metal-insulator transition in two dimensions” *Phys. Rev. B* **55**, R13 421 (1997).
47. S. V. Kravchenko, W. Mason, J. E. Furneaux, and V. M. Pudalov “Experiment-based global phase

- diagram for the quantum Hall effect”, *High Magnetic Fields in the Physics of Semiconductors II*, V. 1, ed. by G. Landwehr and W. Ossau (World Scientific, Singapore, 1997), p. 107.
46. S. V. Kravchenko, D. Simonian, M. P. Sarachik, W. Mason, and J. E. Furneaux “Electric field scaling at a  $B=0$  metal-insulator transition in two dimensions” *Phys. Rev. Lett.* **77**, 4938 (1996).
  45. W. Mason, S. V. Kravchenko, and J. E. Furneaux “Experimental evidence of the Coulomb gap in high-mobility 2D electron system in silicon” *Surf. Sci.* **361/362**, 953 (1996).
  44. J. E. Furneaux, S. V. Kravchenko, Whitney Mason, V. M. Pudalov, and M. D’Iorio “Scaling of a metal/insulator transition in a 2D system at  $B=0$ ” *Surf. Sci.* **361/362**, 949 (1996).
  43. S. V. Kravchenko, J. E. Furneaux, and V. M. Pudalov “Hall insulator in a two-dimensional electron system in silicon in the high-field extreme quantum limit” *Application of High Magnetic Fields in Semiconductor Physics*, ed. D. Heiman (World Scientific, Singapore, 1995).
  42. W. Mason, S. V. Kravchenko, J. E. Furneaux, J. M. Caulfield, J. Singleton, and V. M. Pudalov “Insulator-Metal-Quantum-Hall-effect transition induced by temperature” *Application of High Magnetic Fields in Semiconductor Physics*, ed. D. Heiman (World Scientific, Singapore, 1995).
  41. W. Mason, S. V. Kravchenko, G. E. Bowker, and J. E. Furneaux, “Experimental Evidence for a Coulomb Gap in Two Dimensions” *Phys. Rev. B* **52**, 7857 (1995).
  40. A. A. Shashkin, G. V. Kravchenko, V. T. Dolgoplov, S. V. Kravchenko, and J. E. Furneaux “Comment on ‘Fate of the delocalized states in a vanishing magnetic field’” *Phys. Rev. Lett.* **75**, 2248 (1995).
  39. S. V. Kravchenko, W. Mason, J. E. Furneaux, and V. M. Pudalov “Global phase diagram for the quantum Hall effect: An experimental picture” *Phys. Rev. Lett.* **75**, 910 (1995).
  38. J. E. Furneaux, S. V. Kravchenko, W. E. Mason, G. E. Bowker, and V. M. Pudalov “Destruction of the quantum Hall effect with increasing disorder” *Phys. Rev. B* **51**, 17 227 (1995).
  37. S. V. Kravchenko, Whitney Mason, J. E. Furneaux, J. M. Caulfield, J. Singleton, and V. M. Pudalov “Temperature induced insulator-metal-QHE transitions”, *Physica B* **211**, 410 (1995).
  36. S. V. Kravchenko, W. E. Mason, G. E. Bowker, J. E. Furneaux, V. M. Pudalov, and M. D’Iorio “Scaling of an anomalous metal/insulator transition in a two-dimensional system in silicon at  $B=0$ ” *Phys. Rev. B* **51**, 7038 (1995).
  35. S. V. Kravchenko, G. V. Kravchenko, J. E. Furneaux, V. M. Pudalov, and M. D’Iorio “Anomalous resistance drop in Si inversion layers below 1 K”, *The Physics of Semiconductors*, ed. D. J. Lockwood (World Scientific, Singapore, 1995), V. 1, p. 815.
  34. S. V. Kravchenko, Whitney Mason, J. E. Furneaux, J. M. Caulfield, J. Singleton, and V. M. Pudalov “Temperature induced transitions between insulator, metal, and quantum Hall states in a two-dimensional electron system” *J. Phys.: Cond. Matt.* **7**, L41 (1995).
  33. S. V. Kravchenko, G. V. Kravchenko, J. E. Furneaux, V. M. Pudalov, and M. D’Iorio “Possible metal/insulator transition at  $B=0$  in two dimensions” *Phys. Rev. B* **50**, 8039 (1994).
  32. S. V. Kravchenko, J. E. Furneaux, and V. M. Pudalov “Hall insulator in a two-dimensional system in silicon in the extreme quantum limit” *Phys. Rev. B* **49**, 2250 (1994).
  31. R. H. Eyles, C. J. Mellor, A. J. Kent, K. A. Benedict, L. J. Challis, S. V. Kravchenko, N. N. Zinoviev, and M. Henini “Phonon Measurements of the Energy Gap in the Fractional Quantum Hall State” *Surf. Sci.* **305**, 87 (1994).
  30. V. T. Dolgoplov, G. V. Kravchenko, S. V. Kravchenko, and A. A. Shashkin “Wigner Solid in a Two-Dimensional Electron System in Silicon in the Extreme Quantum Limit?” *Surf. Sci.* **305**, 96 (1994).
  29. M. D’Iorio, V. M. Pudalov, S. V. Kravchenko, and J. W. Campbell “Collective Insulating State at Zero Magnetic Field in a Dilute 2D Electron System” *Surf. Sci.* **305**, 115 (1994).
  28. R. H. Eyles, C. J. Mellor, A. J. Kent, L. J. Challis, S. V. Kravchenko, N. N. Zinoviev, and M. Henini “Phonon Measurements of the Energy Gap in the Fractional Quantum Hall State” *Die Kunst of Phonons*, eds. T. Paszkiewicz and K. Rapcewicz (Plenum Press, New York, 1994), p. 201.
  27. S. V. Kravchenko, J. M. Caulfield, J. Singleton, H. Nielsen, and V. M. Pudalov “Electron-electron interactions in the 2D electron gas in silicon” *Phys. Rev. B* **47**, 12961 (1993).
  26. V. M. Pudalov, M. D’Iorio, S. V. Kravchenko, and J. W. Campbell “Zero magnetic field collective insulator phase in a dilute 2D electron system” *Phys. Rev. Lett.* **70**, 1866 (1993).
  25. H. Nielsen, S. V. Kravchenko, V. M. Pudalov, and D. A. Rinberg “On negative dielectric permittivity in the quantum Hall regime” *Physica B* **184**, 323 (1993).
  24. V. T. Dolgoplov, G. V. Kravchenko, A. A. Shashkin, and S. V. Kravchenko “Metal-insulator transition in Si inversion layers in the extreme quantum limit” *Phys. Rev. B* **46**, 13 303 (1992).
  23. V. T. Dolgoplov, G. V. Kravchenko, A. A. Shashkin, and S. V. Kravchenko “Properties of electron

- insulating phase in Si inversion layers at low temperatures” *JETP Lett.* **55**, 733 (1992).
22. S. V. Kravchenko, J. A. A. J. Perenboom, and V. M. Pudalov “Evidence for two-dimensional electron solid in Si inversion layers” *Surf. Sci.* **263**, 55 (1992).
  21. S. V. Kravchenko, J. A. A. J. Perenboom, and V. M. Pudalov “Two-dimensional electron solid formation in Si inversion layers” *Phys. Rev. B* **44**, 13513 (1991).
  20. S. V. Kravchenko, V. M. Pudalov, D. A. Rinberg, and S. G. Semenchinsky “Evidence for negative sign of the thermodynamic density of states of 2D electrons in Si inversion layers” *Springer Series in Solid State Sciences*, V. 101 - *High Magnetic Fields in Semiconductor Physics III*, ed. G. Landwehr (Springer-Verlag, Berlin, 1992), p. 373.
  19. S. V. Kravchenko, V. M. Pudalov, J. Campbell, and M. D’Iorio “Electron solid at the Si surface in zero magnetic field?” *JETP Lett.* **54**, 532 (1991).
  18. S. V. Kravchenko, V. M. Pudalov, D. A. Rinberg, and S. G. Semenchinsky “Evidence for influence of the interactions between electrons on the chemical potential of a two-dimensional electron gas” *Physica B* **169**, 561 (1991).
  17. S. V. Kravchenko, V. M. Pudalov, and S. G. Semenchinsky “Negative density of states of a two-dimensional electron gas” *Physica B* **169**, 559 (1991).
  16. L. M. Fisher, S. V. Kravchenko, N. A. Podlevskikh, I. F. Voloshin, and S. I. Zakharchenko. “‘Laminar’ and ‘turbulent’ direct current flow in thin metal plates” *Physica B* **165** & **166**, 263 (1990).
  15. S. V. Kravchenko, D. A. Rinberg, S. G. Semenchinsky, and V. M. Pudalov “Evidence for the influence of electron-electron interaction on the chemical potential of the two-dimensional electron gas” *Phys. Rev. B* **42**, 3741 (1990).
  14. S. V. Kravchenko, V. M. Pudalov, D. A. Rinberg, and S. G. Semenchinsky “Direct observation of the influence of the electron-electron interaction on the chemical potential of a 2D electron gas” *Phys. Lett. A* **146**, 535 (1990).
  13. S. V. Kravchenko, B. K. Medvedev, V. G. Mokerov, V. M. Pudalov, D. A. Rinberg, and S. G. Semenchinsky “On the phase diagrams of the magnetoconductivity for 2D electron systems” *Surf. Sci.* **229**, 63 (1990).
  12. S. V. Kravchenko, V. M. Pudalov, and S. G. Semenchinsky “Negative density of states of 2D electrons in a strong magnetic field” *Phys. Lett. A* **141**, 71 (1989).
  11. S. V. Kravchenko and V. M. Pudalov “Does the scaling theory describe the magnetoconductivity of Si-MOSFETs?” *JETP Lett.* **50**, 73 (1989)].
  10. S. V. Kravchenko, B. K. Medvedev, V. G. Mokerov, V. M. Pudalov, D. A. Rinberg, and S. G. Semenchinsky “Phase diagrams of the magnetoconductivity of 2DE systems” *JETP Lett.* **48**, 388 (1988).
  9. S. V. Kravchenko “Nonlinear magneto-dynamic effects in pure metals”, *Ph.D. Thesis*, Institute of Solid State Physics, USSR Academy of Sciences, Chernogolovka (1988), 132 p.
  8. I. F. Voloshin, S. V. Kravchenko, and L. M. Fisher. “On low frequency current states in metals” *Sov. Phys. - JETP* **65**, 596 (1987).
  7. I. F. Voloshin, V. A. Gasparov, S. V. Kravchenko, and L. M. Fisher “Investigations of electron-electron interaction in tungsten” *Sov. Phys. - JETP* **65**, 419 (1987).
  6. S. I. Zakharchenko and S. V. Kravchenko “Negative differential resistance of Bi in a strong magnetic field” *Sov. Phys. - Solid State* **28**, 1989 (1986)].
  5. S. I. Zakharchenko, S. V. Kravchenko, and L. M. Fisher “Resistance oscillations and non-stationary effects in thin metal plate” *Sov. Phys. - JETP* **64**, 390 (1986).
  4. I. F. Voloshin, S. V. Kravchenko, and L. M. Fisher “Chaotization of metal impedance self-oscillations in current state” *Sov. Phys. - Dokl.* **31**, 237 (1986).
  3. I. F. Voloshin, S. V. Kravchenko, L. M. Fisher, and N. A. Podlevskikh “On the nonlinear resistance of thin metal plates” *Sov. Phys. - JETP* **62**, 132 (1985).
  2. I. F. Voloshin, S. V. Kravchenko, L. M. Fisher, and V. A. Yampolsky “Nonlinear anomalous skin-effect in metals” *Sov. Phys. - JETP* **61**, 874 (1985).
  1. V. A. Ioffe, S. I. Andronenko, A. N. Bazhan, S. V. Kravchenko, Ch. Bazan, M. D. Kaplan, and B. G. Vehter “Investigation of magnetic properties of  $\text{TmPO}_4$  and  $\text{HoVO}_4$  in a strong magnetic field” *Sov. Phys. - JETP* **57**, 408 (1983).