

CURRICULUM VITAE ET STUDIORUM

of GIOVANNI RUSSO

1 Personal data

Born in Palermo, Italy, on January 11, 1958.

Full professor of Numerical Analysis, Faculty of Science, University of Catania, Italy

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2 Education and employment

2000-present Full professor of Numerical analysis, University of Catania.

2000-2006 Member of the editorial board of SIAM J. Numer. Anal.

2000 January: winner of position for full professor in Numerical Analysis, competition held at the Faculty of Science, University of Ferrara.

1992-2000 Associate professor of Numerical Analysis and Applied Mathematics, Faculty of Science, University of L'Aquila, Italy.

1990-1992 Researcher in Mathematical Physics, Faculty of Science, University of L'Aquila, Italy.

1987-1990 Post-doctoral position at the Courant Institute of Mathematical Science, New York University.

1987 Philosophy Doctor in Physics, University of Catania, Italy. Supervisor, prof. A.M.Anile.

1982-1983 Post graduate research in Solid State Physics, Physics Institute, University of Catania (supervision prof. E.Rimini).

1982 Laurea degree, *Magna cum Laude*, in Nuclear Engineering, Politecnico di Milano, Milano, Italy.

3 Teaching activity

3.1 Courses, for each year

- 1990-91 Teaching assistance (in Italian *Esercitazioni*) in Classical Mechanics for students in Physics;
- 1991-92 Teaching assistance in Classical Mechanics for students in Physics;
- 1992-93 one year course on Approximation Methods (lectures and exercises) for students in Computer Science and Mathematics.
- 1993-94 one year course on Approximation Methods (lectures and exercises) for students in Computer Science and Mathematics, one six-month course of Basic Numerical Analysis (only lectures) for students in Computer Science;
- 1993-94 one year course on Approximation Methods (lectures and exercises) for students in Computer Science and Mathematics, one six-month course of Basic Numerical Analysis (only lectures) for students in Computer Science;
- 1994-95 one year course on Approximation Methods (lectures and exercises) for students in Computer Science and Mathematics, one six-month course of Basic Numerical Analysis (only lectures) for students in Computer Science;
- 1995-96 one year course on Approximation Methods (lectures and exercises) for students in Computer Science and Mathematics, one six-month course of Basic Numerical Analysis (only lectures) for students in Computer Science
- 1996-97 two six-month courses in Numerical Analysis for students in Mathematics (lectures and exercises) and one six-month course in Numerical Analysis I for students in Computer Science;
- 1997-98 two six-month courses in Approximation Methods (I and II) for students Informatics and Mathematics, one six-month course in Numerical Analysis II (only lectures) for students in Informatics and Mathematics, one six-month course in Basic Numerical Methods II for *Diploma* in Material Science.
- 1998-99 two six-month courses in Approximation Methods (I and II) for students Informatics and Mathematics, one six-month course in Numerical Analysis II (only lectures) for students in Informatics and Mathematics, one six-month course in Basic Numerical Methods II for *Diploma* in Material Science.
- 1999-2000 two six-month courses in Approximation Methods (I and II) for students Informatics and Mathematics, one six-month course in Numerical Analysis II (only lectures) for students in Informatics and Mathematics, two six-month course in Basic Numerical Methods (I and II) for *Diploma* in Material Science.
- 2000 Short course on Numerical Methods (30 hours) for the students of *Scuola Superiore per la Formazione d'Eccellenza* (SSC), University of Catania.
- 2000-2001 One year course in Numerical Analysis (lectures and exercises) for students in Mathematics.
- 2001-2002 One year course in Numerical Analysis (lectures and exercises) for students in Mathematics.
- 2002 Short course on Numerical Methods (30 hours) for the students of *Scuola Superiore per la Formazione d'Eccellenza* (SSC), University of Catania.
- 2002 Six-month (50 hour) course on *Analysis, design, and didactic simulation in Mathematics, II*, in the framework of the courses for high school teachers *Scuola Interuniversitaria Siciliana di Specializzazione per l'Insegnamento nella Scuola Secondaria* (SISSIS).

- 2002-2003 One year course in Numerical Analysis (lectures and exercises) for students in Mathematics.
One six-month course in Numerical Analysis II for students in Informatics.
- 2003 Short course on Numerical Methods (30 hours) for the students of *Scuola Superiore per la Formazione d'Eccellenza* (SSC), University of Catania.
- 2002 Three-month (25 hour) course on *Topics in Numerical Analysis*, in the framework of the courses for high school teachers (SISSIS).
- 2003-2004 One six-month course in Numerical Analysis (lectures and exercises) for students in Mathematics and Informatics.
- 2004 Short course on Numerical Methods (30 hours) for the students of *Scuola Superiore per la Formazione d'Eccellenza* (SSC), University of Catania.
- 2004 Three-month (25 hour) course on *Topics in Numerical Analysis*, in the framework of the courses for high school teachers (SISSIS).
- 2004 Four month course in Numerical Methods in Engineering, Math#371 (two sessions) at the University of Michigan, Ann Arbor, Michigan.
- 2004-2005 Six-month course on *Computer programming and numerical methods*, for the students of Mathematics.
- 2005 Short course on Numerical Methods (30 hours) for the students of *Scuola Superiore per la Formazione d'Eccellenza* (SSC), University of Catania.
- 2005 Short course (12 hours) on numerical methods for partial differential equation, for PhD students in Engineering.
- 2005 Three-month (25 hour) course on *Topics in Numerical Analysis*, in the framework of the courses for high school teachers (SISSIS).
- 2005-2006 Six-month course on *Computer programming and numerical methods*, for the students of Mathematics.
- 2005-2006 One six-month course in Numerical Analysis (lectures and exercises) for students in Mathematics.
- 2006 Short course on Numerical Methods (30 hours) for the students of *Scuola Superiore per la Formazione d'Eccellenza* (SSC), University of Catania.
- 2006 Three-month (25 hour) course on *Topics in Numerical Analysis*, in the framework of the courses for high school teachers (SISSIS).
- 2006 Short course (12 hours) on numerical methods for partial differential equation, for the PhD program in Mathematics for Technology.
- 2006-2007 One six-month course in Approximation Methods (lectures and exercises) for students in Mathematics.
- 2006-2007 One six-month course in Numerical Analysis II (lectures and exercises) for students in Mathematics.
- 2006-2007 One six-month course in Numerical Analysis (lectures and exercises) for students in Mathematics.
- 2007 Short course on Numerical Methods (30 hours) for the students of *Scuola Superiore per la Formazione d'Eccellenza* (SSC), University of Catania.
- 2007 Three-month (25 hour) course on *Topics in Numerical Analysis*, in the framework of the courses for high school teachers (SISSIS).

4 Scientific activity

4.1 Experience abroad

1987-1990 *Post doctoral position*, Courant Institute of Mathematical Sciences, New York University, New York.

1987 October: *visiting* by the Fachbereich Mathematik, Universität Kaiserslautern.

1991-1992 October 1991 - January 1992, and August-September 1992: *post-doctoral position*, Department of Mathematics, University of California, Los Angeles, invited by Prof. Cafisch. January 1992: (one week) Institute for Advanced Study, Princeton, NJ, invited by Prof. J. Strain. July 1992: *visiting*, Fachbereich Mathematik, Universität Kaiserslautern, invited by Prof. H. Neunzert.

1993 July-August: *visiting*, Department of Mathematics, University of California, Los Angeles. August: Department of Mathematics, University of Wyoming, Laramie, WY, USA, invited by del Prof. T. Mathew. September-October: *visiting*, Fachbereich Mathematik, Universität Kaiserslautern.

1994 July-August: *visiting*, Department of Mathematics, University of California, Los Angeles.

1995 Febbraio-Marzo: Institute for Advanced Study di Princeton, NJ, invited by Prof. David Levermore. July-August: *visiting*, Department of Mathematics, University of Michigan, invited by Prof. P. Smereka. October: *visiting*, Fachbereich Mathematik, Universität Kaiserslautern.

1996 July-August: *visiting*, Department of Mathematics, University of Michigan.

1997 July-August: *visiting*, Department of Mathematics, University of Michigan. September: two-week visit, l'Université Paris VI, invited by Prof. B. Perthame.

1998 January: *visiting*, Department of Mathematics, University of California, Los Angeles. February: *visiting*, Université Paul Sabatier, Toulouse, France, invited by Prof. Pierre Degond. July-August: *visiting*, Department of Mathematics, University of Michigan; Department of Mathematics, University of California, Los Angeles; Department of Mathematics, University of Wyoming.

1998-99 October 1998-February 1999: *visiting*, Department of Mathematics, University of Michigan.

1999 August-September: *visiting*, Department of Mathematics, University of Michigan.

2001 July-August: Department of Mathematics, University of Michigan; Department of Mathematics, University of California, Berkeley (one week), invited by Prof. Strain.

2002 May: Department of Mathematics, University of Michigan.

2003 August: Department of Mathematics, University of Michigan.

2004 September-December: visiting professor, Department of Mathematics, University of Michigan.

2005 February, June, September (one week each time): invited by Prof. Ernst Hairer, Department of Mathematics, University of Geneva, Switzerland.

July: Department of Mathematics, University of Michigan.

2006 March (two weeks): invited by Prof. Kazuo Aoki, Department of Aeronautics and Astronautics, Faculty of Engineering, Kyoto University, Kyoto, Japan.

August: Department of Mathematics, University of Michigan.

2007 February-March (one month): visiting professor, Department of Mathematics, University of Lyon, France, invited by Prof. Francis Filbet.

August: Department of Mathematics, University of Michigan.

4.2 Conferences

Prof. Russo participated to several conferences and summer schools.

The list of invited talks follows.

1. Invited: “A particle method for collisional kinetic equation”, 1988 AMS SIAM Summer Seminar, Colorado State University, Fort Collins, Colorado, 18-29 Luglio, 1988.
2. Seminar: “A Lagrangian Scheme for Collisional Kinetic Equations”, Numerical Analysis Seminar, Courant Institute of Mathematical Sciences, New York, 11 Novembre 1988.
3. Invited: “Implicit Particle Methods for the Heat and Navier-Stokes Equations”, International Conference on “Preconditioning techniques on large sparse linear systems”, Cortona, Italy, September 28–October 2, 1992.
4. Invited: “Fast Triangulated Vortex Methods for the 2D Euler Equations”, Eutomech 305, Ercoftac workshop on “Dynamics and Geometry of Vortical Structures”, Cortona, June 28–July 2, 1993.
5. Minisymposium: “Free Lagrangian Vortex Methods for Incompressible Euler and Navier-Stokes Equations”, 1993 SIAM Annual Meeting, Philadelphia, PA, July 12-16, 1993.
6. Invited: “Kinetic Theory of Bubbly Flow”, Workshop on “Exotic application of kinetic theory”, Kaiserslautern, September 27–29, 1993.
7. Invited: “Kinetic Theory for Bubbly Flow”, International Conference on “Nonlinear Equations in Many-Particle Systems”, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, November 28–December 3, 1993.
8. Minisymposium: “Uniformly Accurate Schemes for Hyperbolic Systems with Relaxation”, 1994 SIAM Annual Meeting, San Diego, CA, July 25-29, 1996.
9. Invited: “Schemi uniformemente accurati per sistemi iperbolici con rilassamento”, Giornate di studio su problemi iperbolici, Milano, Italy, October 6–7, 1994.
10. Invited: “A Lagrangian Numerical Method for Fluid-Membrane Interaction in 2D and 3D”, Forum on Vortex Methods for Engineering Applications, Albuquerque, New Mexico, February 22–24, 1995.
11. Invited: “Kinetic Theory of Bubbly Flow”, French workshop “Couplage Equations”, Saint Malo, March 20–21, 1995.
12. Invited: “Metodi numerici basati su una formulazione Hamiltoniana per il trattamento della interazione fluido-membrana in 2D e 3D”, Giornate di studio su problemi differenziali iperbolici, Bologna, 9–10 Novembre 1995.
13. Minisymposium: “High Order Methods for Balance Laws”, 1996 SIAM Annual Meeting, Kansas City, Missouri, July 22-26, 1996.
14. Invited: “A Vlasov-Boltzmann Equation for Bubbly Flow”, Analytische und numerische Approximationsmethoden für Probleme der Plasmaphysik, der Physik verdünnter Gase und von Halbleitern, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, May 12–18, 1996.
15. Minisymposium: “Metodi Numerici per Modelli Idrodinamici dei Semiconduttori”, III Congresso Nazionale della SIMAI, Salice Terme (Pavia), May 27-31, 1996.
16. Minisymposium: “Metodi Numerici per Sistemi Iperbolici con Rilassamento”, III Congresso Nazionale della SIMAI, Salice Terme (Pavia), 27-31 Maggio 1996.

17. Invited: “High order methods for balance laws”, workshop on Numerical Methods for Kinetic Equations, Weierstrass-Institut für Angewandte Analysis und Stochastik, Berlin, September 1–5, 1997.
18. Minisymposium: “On the impulse formulation of the Euler equations”, IX International Conference on Waves and Stability in Continuous Media, Bari, October 6–11, 1997.
19. Invited: “High order central schemes for hyperbolic systems of conservation laws”, IPERAQ97, V Incontro Nazionale sui Problemi di tipo Iperbolico, L’Aquila, November 11–13, 1997.
20. Invited: “High order central schemes for hyperbolic systems of conservation laws”, International school on “Problemes non lineaires appliques 1998, Systemes hyperboliques: Nouveaux Schemas et nouvelles applications”, INRIA Rocquencourt, France, March 16–19, 1998.
21. Invited: “Hydrodynamic models for semiconductor device simulations”, Workshop on “Hyperbolic aspects of moment closure problems”, FORTH, Heraklion, Crete, Greece, April 1–4, 1998.
22. Invited: “Hydrodynamic models for semiconductor device simulations”, First European Symposium on Applied Kinetic Theory, Toulouse, May 6–7, 1998.
23. Invited: “Kinetic Theory of Bubbly Flow”, IV Congresso Nazionale SIMAI, Giardini di Naxos (ME), Italy, June 1–5, 1998.
24. Invited: “An Implicit Monte Carlo Method for Rarefied Gas Dynamics”, Fifth International Workshop on Mathematical Aspects of Fluid and Plasma Dynamics, Wailea, Maui, Hawaii, June 28–July 3, 1998.
25. Plenary: “Schemi centrali per leggi di bilancio”, IPERPV98, VI Incontro Nazionale sui Problemi di Tipo Iperbolico, Pavia, Italy, October 1–3, 1998.
26. Invited: “Implicit Monte Carlo Methods for Rarefied Gas Dynamics”, workshop on “Analytical techniques and asymptotic methods for kinetic problems”, Vienna, October 5–8, 1998.
27. Minisymposium: “Impulse formulation of the Euler equations and fluid-membrane interaction”, International Conference on Industrial and Applied Mathematics (ICIAM) ’99, Edimburgh, July 5–9, 1999.
28. Minisymposium: “Spectral methods for the Boltzmann equation”, ICIAM ’99, Edimburgh, July 5–9, 1999.
29. Invited: “Time relaxed Monte Carlo methods for the Boltzmann equation”, International Congress on “Nonlinear Equations in Many-Particle Systems”, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, December 5–11, 1999.
30. Invited: “Numerical methods for the Boltzmann equation”, International Workshop for numerical methods for Kinetic and Hyperbolic Equations, Ferrara, December 17–18, 1999.
31. Plenary: “Central schemes for balance laws”, HYP2000, Eighth International Conference on Hyperbolic Problems, Theory, Numerics, Applications, Otto-von-Guericke-Universitt Magdeburg, February 28–March 3, 2000.
32. Invited: “Central schemes for balance laws”, HCL2000, TMR Workshop on Numerical Methods for Hyperbolic Conservation Laws, Valencia, Spain, May 10–12, 2000.
33. Minisymposium: “Implicit-Explicit Runge-Kutta schemes for stiff systems of partial differential equations”, WCNA2000, World Congress of Nonlinear Analysis, Catania, Italy, July 19–26, 2000.

34. Invited: “Implicit-Explicit Runge-Kutta schemes for stiff systems of partial differential equations”, final meeting of the European Network for Training, Mobility, and Research on Nonlinear Hyperbolic Problems, September 11–13, 2000, Ecole Normale Supérieure, Paris.
35. Invited: “Implicit-Explicit schemes for balance laws”, TMR workshop on “Advances in Mathematical Semiconductor Modeling”, Pavia, Italy, September 22–23, 2000.
36. Minisymposium: “Central Schemes for balance laws”, 11th ECMI Conference, Torre Normanna, Altavilla Milicia (Palermo), Italy, September 26–30, 2000.
37. Plenary: “Central schemes for balance laws”, IPERBS 2000 Problemi di Tipo Iperbolico VIII Incontro Nazionale, Brescia, Italy, November 30–December, 2000.
38. Invited: “Metodi numerici per equazioni iperboliche e cinetiche”, Convegno del Gruppo Nazionale per Informatica Matematica, Bertinoro, December 11–13, 2000.
39. Invited lecture: “Central schemes for systems with source and for two fluid flows”, THREE-DAY WORKSHOP on “Nonlinear Hyperbolic Systems of Conservation Laws”, ETH Zürich, January 24-26, 2001.
40. Invited lecture: “Central WENO schemes for conservation laws”, THREE-DAY WORKSHOP on “Nonlinear Hyperbolic Systems of Conservation Laws”, ETH Zürich, January 24-26, 2001.
41. Summer School: “Central Schemes and Systems of Balance Laws”, series of lectures for the Summer School on Hyperbolic Partial Differential Equations, Technical University of Hamburg-Harburg, Hamburg, March 2001.
42. Invited: “Central schemes for balance laws”, WASCOM 2001, Porto Ercole (Grosseto), Italy, June 3–9, 2001.
43. Minisymposium: “IMEX Runge-Kutta schemes for hyperbolic systems with relaxation”, 2001 SIAM Annual Meeting, San Diego, California, July 3–13, 2001.
44. Invited: “Time Relaxed Monte Carlo Schemes for the Boltzmann Equation”, Granada Euroconference on Asymptotic Methods and Applications in Kinetic and Quantum Kinetic Theory, September 17–21, 2001.
45. Invited: “Spectral methods for kinetic equations”, TMR Workshop *Numerical and asymptotic methods for kinetic equations*, Universität Saarlandes, Saarbrücken, November 29–December 1, 2001.
46. Invited: “Well balanced central schemes on staggered grid”, Journées Savoisiennes de mathématiques appliquées, EQUATIONS DE SAINT VENANT, Thorie et applications, Chambéry, France, May 16–17, 2002.
47. Invited: “Level set methods for the evolution of faceted crystals”, Conference on “Fronts, Fluctuations, & Growth Conference”, Michigan Center for Theoretical Physics University of Michigan, Ann Arbor, May 20–25, 2002.
48. Minisymposium: “Numerical methods for crystal growth”, AMS-UMI Joint International Meeting, June 12-16, 2002.
49. Invited: “Spectral methods for the time dependent, space non-homogeneous Boltzmann equation”, 2nd International Workshop on Kinetic Theory & Applications, Karlstad University, September 1–3, 2002.
50. Summer School: “Numerical methods for Conservation Laws”, series of lectures for the XXVII Summer School on Mathematical Physics, Ravello, Italy, September 9-21, 2002.

51. Talk in a summer school: “Spectral Methods for the Boltzmann Equation”, given at the XX School of Computational Mathematics: Computational Aspects in Kinetic Models, Piano di Sorrento, Napoli (Italy), September 22-28, 2002.
52. Invited: “Central Schemes for Balance Laws with Application to Shallow Water Equations”, Symposium on Trends and Applications of Mathematics to Mechanics, STAMM2002, Maiori, September 29-October 4, 2002.
53. Session: “Numerical methods for balance laws and kinetic equations”, “Around HYperbolic and Kinetic Equations”, First annual meeting of the HYKE network, Vienna, Austria, February 24–28, 2003.
54. Invited: “Hydrodynamical models for semiconductor device simulation”, workshop on “Analysis and Numerics for Modeling Semiconductor Devices and Biological Channels”, CSCAMM, Niversity of Maryland, College Park, MD, May 19–23, 2003.
55. Invited: “High-order central Runge-Kutta schemes for conservation laws”, international workshop on “Very High-Order Numerical Schemes for Conservation Laws”, Newton Institute, Cambridge, UK, May 27–30, 2003.
56. Invited: “Time Relaxed Monte Carlo Methods: effective time discretization for large range of mean free path”, international workshop on “Direct Simulation Monte Carlo: The Past 40 Years and the Future”, Milano, Italy, June 2–5, 2003.
57. Invited: “Variable grid methods for kinetic equations”, 3-rd Workshop on Kinetic Theory and Applications, Karlstad University, Sweden, 15–17 June 2003.
58. Invited: “Implicit-Explicit Runge-Kutta schemes and applications to hyperbolic systems with relaxation”, international workshop on “Advances and challenges in time integration of PDE’s”, Brown University, Providence, RI, August 18–20, 2003.
59. Minisymposium: “Finite difference staggered central schemes for conservation laws, Icosahom 2004, Brown University, June 2004.
60. Invited: “Kinetic Monte Carlo methods for strained epitaxial growth”, Workshop on *Issues on computational transport in meso and nano scales*, March 4 & 5, 2005, Center for Numerical Analysis, Institute for Computational Engineering and Sciences (ICES), The University of Texas at Austin, Austin, Texas, USA.
61. Invited seminar: “Computation of Strained Epitaxial Growth in Three Dimensions by Kinetic Monte Carlo”, Center for Scientific Computation and Mathematical Modeling, University of Maryland, College Park, March 9, 2005.
62. Invited: “Kinetic Monte Carlo methods for strained epitaxial growth”, First Mediterranean Conference in Applied Mathematics, Tozeur, Tunisia, March 23-25, 2005.
63. Invited: “High Order Finite Volume Schemes for Balance Laws with Stiff Source”, Workshop on Foundations of Numerical PDEs, July 7 - July 9, 2005, Foundations of Computational Mathematics (FoCM2005), Universidad de Cantabria in Santander, Spain.
64. Minisymposium: “Kinetic Monte Carlo Simulations of Heteroepitaxial Growth in Three Dimensions”, *Elastic effects in Epitaxially Grown Thin Films*, 2005 SIAM Annual Meeting, July 11–15, 2005, Hilton New Orleans, New Orleans, LA, USA.
65. Invited: “Kinetic Monte Carlo Simulation of Elastic Effects in Heteroepitaxial Growth”, SEMIC2006, Recent Advances in Modeling and Simulation of Semiconductor Devices and Circuits, Vienna University of Technology, Technische Universitt Wien, February 16-17, 2006.

66. Invited: "Introduction to Level Set Methods", minisymposium M27, VIII SIMAI Conference, Baia Samuele (RG), Italy, May 22–26, 2006.
67. Invited: "Time relaxed Monte Carlo methods for the Boltzmann equation", RGD25, 25 th International symposium on Rarefied Gas Dynamics, Saint Petersburg, Russia, July 15–21, 2006.
68. Invited: High order implicit semilagrangian WENO schemes for the BGK model of rarefied gas dynamics, Minisymposium MS6, 7th International Conference on Spectral and High-Order Methods (ICOSAHOM'07) June 18-22, 2007, Beijing

4.3 Conference organization

Prof. Russo organized several international workshops and conferences.

1. International workshop on "Mathematical Methods for Semiconductors", L'Aquila 3–5 May 1995 (together with Prof. P.Marcati, University of L'Aquila.)
2. Minisymposium "Metodi Numerici per Fenomeni di Propagazione", IV Congresso Nazionale SIMAI, Giardini di Naxos (Messina), 1-5 June, 1998.
3. International workshop "Numerical methods for Hyperbolic and Kinetic Equations", Department of Mathematics, University of Catania, February 8-10, 2001.
4. Minisymposium "Numerical methods for hyperbolic systems with source terms", presso il 2001 SIAM Annual Meeting, Town and Country Hotel, San Diego, California, July 9-13, 2001 (joint with Prof. Pareschi, University of Ferrara.)
5. National workshop "IPERCT2001, Problemi di Tipo Iperbolico", Santa Tecla Palace Hotel, Acireale (CT), Italy, November 22-24 2001.
6. September 2002, XX Summer School of Computational Mathematics, "Computational aspects in kinetic theory", Piano di Sorrento, Napoli, Italy, September 22–28, 2002.
7. International conference (together with L.Pareschi and G.Toscani) "Modeling and Numerics of Kinetic Dissipative Systems", May 31 - June 4, 2004, Lipari, Italy.
8. Minisymposium (with A.Majorana) on "Mathematical and computational aspects of kinetic models" at 5th International ISAAC Congress, July 25-30, 2005, Department of Mathematics and Informatics, University of Catania Catania, Sicily, Italy.
9. Two minisymposia: Multiscale evolutionary problems, and "shallow water models: numerical methods and applications" (in collaboration with prof. R. Fazio), at the "VIII SIMAI Conference", Baia Samuele (Ragusa, Italy), 22-26 May 2006.
10. Minisymposium on "Numerical methods for conservation laws", ECMI 2006, July 10–14 2006, University of Madrid Carlos III, Madrid, Spain.
11. Minisymposium on "Stiff problems", SCICADE 2007, Saint Malo, France, 9-13 July 2007.
12. Member of the scientific committee of the conference "Modeling and computational methods in fluid dynamics and material science: towards the challenge of the nanoscales", Bressanone, Italy, December 19–22, 2007.

4.4 Summer Schools

Prof. Russo has been one of the main lecturers in several summer schools. Among these we recall

July 1999, “Numerical methods for kinetic equations”, CEMRACS courses, INRIA, Rocquencourt, France.

March 2001, “Central schemes and Systems of Conservation Laws”, Summer School on Hyperbolic Partial Differential Equations, Technische Universitaet Hamburg-Harburg.

September 2002: Ravello summer school on Mathematical Physics, one week short course on “Numerical methods for Conservation Laws”.

June 2004: Summer school on “Methods and Models of Kinetic Theory”, one week short course on numerical methods for the Boltzmann equation, Porto Ercole, Grosseto, Italy, June 4–10, 2004.

November 2007: Short course on “High order shock capturing schemes for balance laws”, in the summer school *Advanced School on Numerical Solutions of Partial Differential Equations New Trends and Applications*, Centre de Recerca Matematica, University of Barcelona, Spain, November 15 to 21, 2007.

4.5 Referee activity

Since December 2000, Prof. Russo is a member of the editorial board of SIAM Journal of Numerical Analysis.

Since 2002 he is a member of the scientific committee of the journal “Le Matematiche”, editet by the University of Catania.

He has been referees of papers submitted to the following journals

1. SIAM Journal of Numerical Analysis
2. SIAM Journal of Applied Mathematics
3. SIAM Journal of Scientific Computing
4. Journal of Computational Physics
5. Mathematical Models and Methods in Applied Sciences
6. Computers and Fluids
7. Journal of Difference Equations and Applications
8. COMPEL
9. Transport Theory and Statistical Physics
10. Mathematical Models and Numerical Analysis
11. Numerical Methods for Partial Differential Equations
12. Journal of Computational Electronics
13. Communications in Mathematical Sciences
14. Journal of Scientific Computing
15. Journal of Computation and Applied Mathematics
16. Calcolo
17. Le Matematiche

He has been reviewer of several PhD thesis.

4.6 Editorial Board

G.Russo has been associate editor of SIAM J. Numer. Anal. from 2001 to 2006.

He is presently member of the Editorial Board of “Le Matematiche”, a general mathematical journal published by the University of Catania.

4.7 Scientific Committees

Prof. Russo has been member of several committee for university positions. In particular we recall the following.

PhD defence in Italy seven times, 1997, 1998, twice in 2003, 2006, twice in 2007.

Researcher position three times, 1995, 1998, 1999.

Confirmation associate professors once, in 2002.

Confirmation researchers once, in 1994.

Foreigner habilitation twice, for the french *Habilitation a diriger des recherches*

Full professorship once, in 2005.

4.8 Research projects

Bilateral project USA-Italy duration: three years (1996-98), financed by Italian *Consiglio Nazionale delle Ricerche* American National Science Foundation. Title of the project: “Numerical and analytical methods for the simulation and control of fluids”. Universities involved: University of L’Aquila, University of Rome, “La Sapienza”, University of California, Los Angeles. Principal investigators: Giovanni Russo (University of L’Aquila) and Russel E. Caflisch (UCLA).

National project 40% (now PRIN) G.Russo has been Scientific Responsible of local units in several occasions: 1994, 1999 (contribution of the Ministry of Education [MURST]: 28 million lira), 2001 (MURST contribution: 59 million lira), 2004 (MURST contribution 36,700 Euros).

Vigoni program 1998-99 For collaboration between Italian and German Universities. Joint project between University of L’Aquila (G.Russo) and Universität des Saarlandes (prof.S.Rjasanow).

GNIM project 2000 National project on *Numerical methods for hyperbolic and kinetic equations*.

INDAM project 2004 and 2005 National project on *Numerical methods for multiscale evolutionary problems* (14,500 Euros each year).

INTAS 2000 Principal investigator of INTAS project (868) for sponsoring research in former soviet countries. Title of the project: “Conservation laws of mechanics of continua”. Duration: 2 years. Total financial support: 60,000 Euros (80% of which goes to former soviet institutions). Universities involved: University of L’Aquila (then Catania after G.Russo moved to Catania), Italy, Ecole Polytechnique, France, Lavrentyev Institute of Hydrodynamics, and Sobolev’s Institute of Mathematics Novosibirsk, Russia.

4.9 PhD Program

Starting 2002, G.Russo is coordinator of a new PhD program in “Mathematics for Technology”, University of Catania. Information about the PhD program can be found at <http://www.dmi.unict.it/~russo/DotMatTec/index.htm>

5 Scientific production

From 1982 to 2003 G. Russo has worked on several research fields, the main of which are:

1. Experimental and theoretical study of laser annealing induced by picosecond laser pulses
2. Asymptotic methods in wave propagation
3. Kinetic models for bubbly flow
4. Hydrodynamical models of semiconductors
5. Computational fluid dynamics
6. Numerical methods for conservation laws
7. Numerical methods for kinetic equations
8. Mathematical modeling and simulation of crystal growth

The first topic has been considered in the preparation of the *laurea* thesis and in the first year after *laurea*.

The second has been the subject of the PhD thesis in Physics, at the University of Catania.

The research on the third subject has been conducted in collaboration with Prof. Peter Smereka, of the University of Michigan. Hydrodynamical models for semiconductors have been studied in collaboration with researchers of the University of Catania (Anile, Majorana, Romano).

Numerical methods for fluid dynamics have been considered, with particular emphasis on the vortex method for incompressible Euler and Navier-Stokes equations, mainly during the post-doctoral study at the Courant Institute of the New York University, and, at the beginning of '90, at the University of L'Aquila.

The last three topics constitute the main research areas at present. In particular, numerical methods for conservation laws have been developed with younger collaborators (mainly D. Levy, Stanford and G. Puppo, Politecnico di Torino), numerical methods for kinetic equations with L.Pareschi, University of Ferrara, G.Toscani, University of Pavia, and F.Filbet, University of Orleans, France.

The research on numerical methods for crystal growth, with particular concern for polycrystal formation and epitaxial growth, is conducted in collaboration with Prof. P. Smereka.

References

- [1] **PhD. Thesis:** “Onde d’urto in fluidodinamica classica, relativistica ed applicazioni”, Università di Catania, 1987.
- Books:**
- [2] A. M. Anile, J. K. Hunter, P. Pantano, G. Russo, “Ray Methods for Nonlinear Waves in Fluids and Plasmas”, Longman Scientific & Technical, Harlow (UK), 1993.
- [3] G.Naldi, L.Pareschi, G.Russo, “Introduzione al Calcolo Scientifico, metodi e applicazioni con Matlab”, McGraw-Hill, Milano, 2001.
- [4] Modeling and computational methods for kinetic equations. Edited by Pierre Degond, Lorenzo Pareschi and Giovanni Russo. Modeling and Simulation in Science, Engineering, & Technology. Birkhuser Boston, Inc., Boston, MA, 2004.
- Papers and Conference Proceedings:**
- [5] S.U.Campisano, P.Baeri, E.Rimini, A.M.Malvezzi, G.Russo, “Impurity redistribution in Bi-implanted Si after nanosecond and picosecond Nd laser pulse irradiation”, *Appl. Phys. Lett.*, **415**, 456-458 (1982).
- [6] S.U.Campisano, P.Baeri, E.Rimini, G.Russo, A.M.Malvezzi, “Impurity redistribution in ion implanted Si after picosecond Nd laser pulse irradiation”, *Mat. Res. Soc. Symp. Proc.* , **13**, 273-279 (1983).
- [7] E.Rimini and G.Russo, “Crystallization induced by pulsed laser irradiation”, *Materials Chemistry and Physics*, (**9**), 257-265 (1983).
- [8] E.Rimini, P.Baeri, G.Russo, “Fundamental of laser pulse irradiation of Silicon”, *Proc. of the Int. Conf. on Energy Pulse Modification*, Dresda, Sept. 1984, 3–13.
- [9] P.Baeri, M.A.Harith, G.Russo, E.Rimini, A.Giulietti, M.Vaselli, “Free carrier dynamic and energy transfer to the Si lattice during pico and nanosecond Nd laser pulse irradiation”, *Phys. Stat. Sol. (b)*, **130**, 225-233 (1985).
- [10] A. M. Anile, G. Russo, “A geometric theory for the propagation of weak shock waves”, Atti del Simposio Italo-Tedesco su “Applications of Mathematics to Technology”, Roma, 26-30 Marzo, 1984, G.B.Teubner, Stuttgart, 96–123.
- [11] A. M. Anile, G. Russo, “Asymptotic methods for shock wave propagation”, Atti del Convegno Internazionale su “Mathematical Aspects of Fluid and Plasma Dynamics”, Trieste, 30 Maggio - 2 Giugno, 1984, 5–15.
- [12] G. Russo, “Generalized Wavefront Expansion: properties and limitations”, *Meccanica*, **21**, 191–199 (1986).
- [13] A. M. Anile, G. Russo, “Generalized Wavefront Expansion I. Higher order corrections for the propagation of weak shock waves”, *Wave Motion*, **8**, 243–258 (1986).
- [14] A. M. Anile, G. Russo, “Corrugation stability for plane relativistic shock waves”, *Physics of Fluids*, **29**(9), 2847–2852 (1986).
- [15] A. Jeffrey, G. Russo, “Comparison of theoretical and numerical criteria for water wave breaking”, *Wave Motion*, **9**, 261–268 (1987).

- [16] A. M. Anile, G. Russo, “Linear stability of plane relativistic shock waves”, *Physics of Fluids*, **30**(4), 1045–1051 (1987).
- [17] G. Russo, A. M. Anile, “Stability properties of relativistic shock waves : basic results”, *Physics of Fluids*, **30**(8), 2406–2413 (1987).
- [18] A. M. Anile, G. Russo, “Generalized Wavefront Expansion II. The propagation of step- shocks”, *Wave Motion*, **10**, 3–18 (1988).
- [19] G. Russo, “Stability properties of relativistic shock waves : applications”, *Astrophysics Journal*, **334**, 391–415 (1988).
- [20] G. Russo, “On the evolution of ordinary discontinuities and characteristic shocks”, *Le Matematiche*, **XXI**, 123–141 (1986), Università di Catania.
- [21] S. Motta, G. Russo, H. Mook, J. Wick, “A Number theoretical convergence proof of a point approximation of a space-homogeneous transport equation”, *Le Matematiche*, **XXI**, 161–178 (1986), Università di Catania.
- [22] A. M. Anile, G. Russo, “Corrugation stability of magnetohydrodynamic shock waves” in *Nonlinear Wave Motion*, ed. Alan Jeffrey, Enghelbrecht, London, 1989, 11–21
- [23] S. Motta, G. Russo, H. Mook, J. Wick, “Point approximation of a space-homogeneous transport equation”, *Numer. Math.*, **56**, 763–774 (1990).
- [24] G. Russo, “A particle method for collisional kinetic equations. I. Basic theory and one dimensional results.”, *J. Comput. Phys.*, **87**(2), 270–300 (1990).
- [25] G. Russo, “Some remarks on the stability of shock waves”, *Meccanica*, **25**(2), 83–91 (1990).
- [26] G. Russo, “A Lagrangian method for collisional kinetic equations”, atti del convegno estivo AMS-SIAM, Colorado State University, Fort Collins, Colorado, 18-29 Luglio, *Lecture Notes in Applied Mathematics*, **26**, 519–540 (1990), American Mathematical Society.
- [27] G. Russo, “Deterministic diffusion of particles”, *Communications of Pure and Applied Mathematics*, **XLIII**, 697–733 (1990).
- [28] G. Russo, “Deterministic Vortex Methods for the Incompressible Navier-Stokes Equation”, presentato al convegno “The Free Lagrangian Conference”, 3–7 Giugno, 1990.
- [29] G. Russo, “A Lagrangian Vortex Method for the Incompressible Navier- Stokes Equations”, presentato al 1990 AMS-SIAM Summer Seminar on *Vortex Dynamics and Vortex Methods*, Seattle, Washington, 18-29 Giugno, 1990, *Lectures in Applied Mathematics*, **28**, 585–596 (1991).
- [30] A. Majorana and G. Russo, “Mathematical aspects of a hydrodynamic model for device simulation”, Proceedings of the VI International Conference on Waves and Stability in Continuous Media, Acireale, may 27–June 1, 1991, *Le Matematiche*, **Vol. XLVI**, 235–246 (1991).
- [31] G. Russo and J. K. Hunter, “A transport equation for the evolution of shock amplitudes along the rays”, Proceedings of the VI International Conference on Waves and Stability in Continuous Media, Acireale, may 27–June 1, 1991, *Le Matematiche*, **Vol. XLVI**, 403–413 (1991).
- [32] G. Russo and R.E. Caflisch, “Implicit Numerical Methods for Kinetic Equations”, Proceedings of the Fourth International Conference on Hyperbolic Problems, Theory, Numerical Methods and Applications, Taormina, April 3-8, 1992.
- [33] G. Russo and R.E. Caflisch, “Implicit Methods for Kinetic Equations”, proceedings of the 18th International Symposium on Rarefied Gas Dynamics, Vancouver, Canada, July 26-31, 1992.

- [34] G. Russo, “A Deterministic Vortex Method for the Navier-Stokes Equations”, *J. Comput. Phys.*, **108**(2), (84–94)1993.
- [35] A. Majorana and G. Russo, “Stationary solutions of hydrodynamic models for semiconductor device simulation”, *COMPEL*, **121**, 81–93 (1993).
- [36] G. Russo and J.A. Strain, “Fast Triangulated Vortex Methods for the 2-D Euler Equations”, *J. Comput. Phys.*, **111**(2), 291–323 (1994).
- [37] M.C. Recchioni, G. Russo, “A Lagrangian Numerical Method for Fluid-Membrane Interaction in 2D and 3D”, Forum di Vortex Methods for Engineering Application, Albuquerque, New Mexico, February 22-24, 1995.
- [38] G. Russo and P. Smereka, “Kinetic Theory of Bubbly Flow. I. Collisionless case”, *SIAM J. Appl. Math.*, **56**(2), 327–357 (1996).
- [39] G. Russo and P. Smereka, “Kinetic Theory of Bubbly Flow. II. Fluid Dynamic Limit”, *SIAM J. Appl. Math.*, **56**(2), 358-371 (1996).
- [40] G. Califano, G. Di Stefano, G. Fabrizio, G. Russo, and L. Sponta, “Performance Analysis of Threshold Neurons with Discrete Weights”, Proceedings of TAINN 96, Fifth International Symposium on Artificial Intelligence and Neural Networks, 24-33, Istanbul, 1996.
- [41] R.E. Caflisch, Shi Jin, and G. Russo, “Uniformly Accurate Schemes for Hyperbolic Systems with Relaxation”, *SIAM J. Numer. Anal.*, **34**(1), 246–281 (1997).
- [42] M. Morandi Cecchi, M. Redivo Zaglia, and G. Russo, “Extrapolation Methods for Hyperbolic Systems with Relaxation”, *Journal of Computational and Applied Mathematics*, **66**, 359–375 (1996).
- [43] M. C. Recchioni, G. Russo, “Hamiltonian Based Numerical Methods for Fluid-Membrane Interaction in 2D and 3D”, *SIAM J. Sci. Comput.*, **19**(3), 861–892 (1998).
- [44] T.P. Mathew, P.L. Polyakov, G. Russo, and J. Wang, “Domain Decomposition Operator Splitting for the Solution of Parabolic Equations”, *SIAM J. Sci. Comput.*, **19**(3), 912–932 (1998).
- [45] G. Russo, “A remark on the paper ‘The parameter dependence of the coefficient in a model for constant pressure steam injection in soil’ ”, *Mathematical Models and Methods in Applied Sciences*, **8**(8), 1317–1321 (1998).
- [46] F. Bianco, G. Puppo, G. Russo, “High Order Central Schemes for Hyperbolic Systems of Conservation Laws”, HYP-98 Seventh International Conference on Hyperbolic Problems, Theory, Numerics, Applications, ETH Zuerich, Switzerland, February 9-13, 1998, appeared in *International Series of Numerical Mathematics*, **129**, 55–64 (1999), Birkhäuser Verlag, Basel.
- [47] S.F. Liotta, V. Romano, G. Russo, “Central Schemes for Systems of Balance Laws”, HYP-98 Seventh International Conference on Hyperbolic Problems, Theory, Numerics, Applications, ETH Zuerich, Switzerland, February 9-13, 1998, appeared in *International Series of Numerical Mathematics*, **129**, 651–660 (1999), Birkhäuser Verlag, Basel.
- [48] G. Russo, “On the impulse formulation of the Euler Equations”, Proceedings of the IX International Conference on Waves and Stability in Continuous Media, Rendiconti del Circolo Matematico di Palermo, Serie II, Suppl. 57, 447–542, 1998.
- [49] V. Romano, G. Russo, “Hyperbolicity condition for the hydrodynamical model of charge transport in semiconductor based on Extended Thermodynamics”, Proceedings of the IX International Conference on Waves and Stability in Continuous Media, Rendiconti del Circolo Matematico di Palermo, Serie II, Suppl. 57, 433–438, 1998.

- [50] F. Bianco, G. Puppo, G. Russo, “High order central schemes for hyperbolic systems of conservation laws”, Proceedings of the IX International Conference on Waves and Stability in Continuous Media, Rendiconti del Circolo Matematico di Palermo, Serie II, Suppl. 57, 47–50, 1998.
- [51] A. M. Anile, V. Romano, G. Russo, “Hyperbolic Hydrodynamical Model of Carrier Transport in Semiconductors”, *VLSI Design*, **8**, 521–525 (1998).
- [52] P. Degond, P.F. Peyrard, G. Russo, and P. Villedieu, “Polynomial upwind schemes for hyperbolic systems”, *C. R. Acad. Sci. Paris*, **t. 328**, Série I, 479–483 (1999).
- [53] F. Bianco, G. Puppo, G. Russo, ”High order central schemes for hyperbolic systems of conservation laws”, *SIAM J. Sci. Comput.*, **21**, (1999), 294-322.
- [54] D. Levy, G. Puppo, G. Russo, “Central WENO Schemes for Hyperbolic Systems of Conservation Laws”, *Mathematical Modelling and Numerical Analysis*, **33**(3), 547–571 (1999).
- [55] G. Russo, P. Smereka, “Impulse formulation of the Euler Equations: general properties and numerical methods”, *J.Fluid Mech.*, **391**, 189–209 (1999).
- [56] L.Pareschi, G. Russo, “An introduction to Monte Carlo methods for the Boltzmann equation”, CEMRACS 1999 (Orsay), 35–76 (electronic), ESAIM Proc., 10, Soc. Math. Appl. Indust., Paris, 1999
- [57] L. Pareschi, G. Russo, “Numerical solution of the Boltzmann equation I: spectrally accurate approximation of the collisional operator”, *SIAM J. Numer. Anal.*, **37**(4), 1217-1245 (2000).
- [58] D. Levy, G. Puppo, G. Russo, “On the Behavior of the Total Variation in CWENO Methods for Conservation Laws”, proceeding of ICOSAHOM 98, Herzliya, Israel, June 22-26, 1998, *Applied Numerical Mathematics*, **33** (2000), 415–421.
- [59] D. Levy, G. Puppo, G. Russo, “A Third Order Central Weno Scheme for 2D Conservation Laws”, proceeding of ICOSAHOM 98, Herzliya, Israel, June 22-26, 1998, *Applied Numerical Mathematics*, **33** (2000), 407–414.
- [60] L. Pareschi, G. Russo, G. Toscani, “Mthode spectrale rapide pour l’equation de Fokker-Planck-Landau. (French) [Fast spectral method for the Fokker-Planck-Landau equation] *C. R. Acad. Sci. Paris*, **Sr. I Math. 330**(6), 517–522 (2000).
- [61] D. Levy, G. Puppo, G. Russo, “Compact central WENO schemes for multidimensional conservation laws”. *SIAM J. Sci. Comput.*, **22**(2), 656–672 (2000).
- [62] A.M. Anile, V. Romano, G. Russo, “Extended hydrodynamical model of carrier transport in semiconductors”, *SIAM J. Appl. Math.*, **61**(1), 74–101 (2000).
- [63] L. Pareschi, G. Russo, “On the stability of spectral methods for the homogeneous Boltzmann equation”, Proceedings of the Fifth International Workshop on Mathematical Aspects of Fluid and Plasma Dynamics (Maui, Hawaii, June 28 - July 3, 1998). *Transport Theory Statistical Physics*, **29**(3-5), 431–447 (2000).
- [64] L. Pareschi, G. Russo, “Asymptotic preserving Monte Carlo methods for the Boltzmann equation”, Proceedings of the Fifth International Workshop on Mathematical Aspects of Fluid and Plasma Dynamics, (Maui, Hawaii, June 28 - July 3, 1998), *Transport Theory and Statistical Physics*, **29**(3-5), 415-430 (2000).
- [65] V. Romano, G. Russo, “Numerical solution for hydrodynamical models of semiconductors”, *Math. Models Methods Appl. Sci.*, **10**(7), 1099–1120 (2000).

- [66] G. Russo, P. Smereka, “A level-set method for the evolution of faceted crystals”, *SIAM J. Sci. Comput.*, **21**(6), 2073–2095 (2000).
- [67] G. Russo, P. Smereka, “A remark on computing distance functions”, *J. Comput. Phys.*, **163**(1), 51–67 (2000).
- [68] A.M. Anile, M. Junk, V. Romano, G. Russo, “Cross-validation of numerical schemes for extended hydrodynamical models of semiconductors”, *Math. Models Methods Appl. Sci.*, **10**(6), 833–861 (2000).
- [69] L. Pareschi, G. Russo, G. Toscani, “Fast spectral methods for the Landau-Fokker-Plank equation”, *J. Comput. Phys.*, **165**(1), 216–236 (2000).
- [70] S.F. Liotta, V. Romano, G. Russo, “Central schemes for balance laws of relaxation type”, *SIAM J. Numer. Anal.*, **38**(4), 1337–1356 (2000).
- [71] L. Pareschi, G. Russo, “Implicit-Explicit Runge-Kutta Schemes for Stiff Systems of Differential Equations”, *Recent Trends in Numerical Analysis*, D. Trigiante Ed., Nova Science Publ., 269–288 (2000).
- [72] L. Pareschi, G. Russo, “Fast spectral methods for Boltzmann and Landau integral operators of gas and plasma kinetic theory”, in *Numerical analysis: methods and mathematical software (Italian)* (Ferrara, 2000). *Ann. Univ. Ferrara Sez. VII (N.S.)* **46** (2000), suppl., 329–341.
- [73] R. Fazio, G. Russo, “A Lagrangian central scheme for multi-fluid flows”. *Hyperbolic problems: theory, numerics, applications*, Vol. I, II (Magdeburg, 2000), 347-356, *Internat. Ser. Numer. Math.*, bf 140, **141**, Birkhuser, Basel, 2001.
- [74] G. Russo, “Central schemes for balance laws”. *Hyperbolic problems: theory, numerics, applications*, Vol. I, II (Magdeburg, 2000), 821-829, *Internat. Ser. Numer. Math.*, 140, 141, Birkhuser, Basel, 2001.
- [75] L.Pareschi, G.Russo, An introduction to Monte Carlo methods for the Boltzmann equation. *ESAIM: Proceedings*, **10**, 35-75 (2001).
- [76] L. Pareschi, G. Russo, Time relaxed Monte Carlo methods for the Boltzmann equation, *SIAM J. Sci. Comput.*, **23**(4), 1253–1273 (2001).
- [77] G. Russo, “Central Schemes for Balance Laws”, “WASCOM 2001”-11th Conference on Waves and Stability in Continuous Media (Porto Ercole), 503–514, World Sci. Publishing, River Edge, NJ (2002).
- [78] D. Levy, G.Puppo, G.Russo, “A fourth-order central WENO Schemes for multidimensional hyperbolic systems of conservation laws”, *SIAM J. Sci. Comput.*, **24**(2), 480–506 (2002).
- [79] G. Russo, “Central schemes and systems of balance laws”, in *Hyperbolic partial differential equations* (Hamburg, 2001), 59–114, Vieweg, Braunschweig, (2002).
- [80] G. Russo, “Central schemes for balance laws”, *Progress in industrial mathematics at ECMI 2000* (Palermo), *Math. Ind.*, 1, 313–317, Springer, Berlin, (2002).
- [81] F. Filbet, G. Russo, “High order numerical methods for the space non-homogeneous Boltzmann equation”, *J. Comput. Phys.*, **186**(2), 457-480 (2003).
- [82] T.P. Mathew, G. Russo, “Maximum norm stability of difference schemes for parabolic equations on overset nonmatching space-time grids”, *Math. Comp.*, **72**(242), 619–656 (2003).
- [83] L. Pareschi, G. Russo, G. Toscani, A kinetic approximation of Hele-Shaw flow, *C. R. Math. Acad. Sci. Paris* 338 (2004), no. 2, 177–182.

- [84] F. Filbet, G. Russo, “Accurate Numerical Methods for the Boltzmann Equation”, in *Modelling and Computational Aspects of Kinetic Equations*, Edito da P. Degond, L. Pareschi, G. Russo, Birkhäuser, capitolo 4, pp.123–152, 2004.
- [85] L.Sander, G.Russo, P.Smereka, Quasicontinuum Monte Carlo: A method for surface growth calculations, *Phys. Rev. B*, **69**, 121406(R) (2004).
- [86] L. Pareschi, G. Russo, High order asymptotically strong-stability-preserving methods for hyperbolic systems with stiff relaxation. (English. English summary) *Hyperbolic problems: theory, numerics, applications*, 241–251, Springer, Berlin, 2003.
- [87] L. Pareschi, G. Puppo, G. Russo, “Central Runge-Kutta Schemes for Conservation Laws”, *SIAM J. Sci. Comput.* **26** (2005), no. 3, 979–999.
- [88] A. Chesnokov, G. Russo, V. Teshukov, “Analytical and numerical solutions of the shallow water equations for 2D rotational flows”, *Math. Models Methods Appl. Sci.* **14** (2004), no. 10, 1451–1479.
- [89] Russo, G.; Teshukov, V. M.; Chesnokov, A. A., “A special class of solutions of the kinetic equation of a bubbly fluid” (Russian) *Prikl. Mekh. Tekhn. Fiz.* **46** (2005), no. 2, 33–43; translation in *J. Appl. Mech. Tech. Phys.* **46** (2005), no. 2, 176–184
- [90] Peter Smereka, Xingquan Li, Giovanni Russo, and D.J. Srolovitz, Simulation of faceted film growth in three dimensions: microstructure, morphology and texture, *Acta Materialia*, **53** (4), 2005, 1191–1204 (2005).
- [91] Anile, A. M.; Nikiforakis, N.; Romano, V.; Russo, G., “Discretization of semiconductor device problems. II”, *Handbook of numerical analysis. Vol. XIII*, 443–522, *Handb. Numer. Anal.*, XIII, North-Holland, Amsterdam, 2005.
- [92] F.Filbet, and G. Russo, “A rescaling velocity method for kinetic equations: I. homogeneous case”, *Proceedings Modelling and Numerics of Kinetic Dissipative Systems*, Lipari, Italy, 2004, Nova-Science.
- [93] Pizatella, R. M.; Russo, G. Solving conservation laws by ADER central Runge-Kutta schemes. *Applied and industrial mathematics in Italy*, 428–439, *Ser. Adv. Math. Appl. Sci.*, 69, World Sci. Publ., Hackensack, NJ, 2005.
- [94] Pareschi, Lorenzo; Russo, Giovanni “An introduction to the numerical analysis of the Boltzmann equation”, *Riv. Mat. Univ. Parma* (7) **4**** (2005), 145–250.
- [95] L. Pareschi, G. Russo, “Implicit-Explicit Runge-Kutta schemes and applications to hyperbolic systems with relaxation”, *Journal of Scientific Computing*, **25** (2005) n.1, 129–155.
- [96] E. Carlini, E. Ferretti, G. Russo, “A Weighted Essentially Non Oscillatory, large time step scheme for Hamilton-Jacobi equations”, *SIAM J. Sci. Comput.* **27** Number 3, pp.107-109, (2005).
- [97] G.Russo, P.Smereka, “Computation of strained epitaxial growth in three dimensions by kinetic Monte Carlo”, *Journal of Computational Physics*, Volume 214, Issue 2, 20 May 2006, Pages 809-828.
- [98] G. Puppo, G. Russo, Staggered Finite Difference Schemes for Conservation Laws, *ICOSAHOM 2004*, Brown University, Providence, RI, June 21–25, 2004, *Journal of Scientific Computing*, ISSN: 0885-7474 (Paper) 1573-7691 (Online), March 2006.
- [99] G.Russo, P.Smereka, A multigrid-Fourier method for the computation of elastic fields with application to heteroepitaxy. *Multiscale Model. Simul.*, **51**, 130–148 (2006).

- [100] M. Briani, R. Natalini, G. Russo, “Implicit-explicit numerical schemes for jump-diffusion processes”, *Calcolo*, **44**, 33–57 (2007).

Papers in press:

- [101] Piotr Kowalczyk, Andrzej Palczewski, Giovanni Russo, Zbigniew Walenta, “Numerical solutions of the Boltzmann equation: comparison of different algorithms”, accepted for publication on European Journal of Mechanics, B.

Conference proceedings

- [102] G.Russo, Central schemes for conservation laws with application to shallow water equations, in Trends and applications of mathematics to mechanics : STAMM 2002, S. Rionero and G. Romano (editors), pp.225–246, Springer-Verlag Italia SRL, 2005.
- [103] G.Russo, L.Pareschi, S.Trazzi, A.A.Shevyrin, Ye.A.Bondar, M.S.Ivanov, Comparison between Time Relaxed Monte Carlo Method and Majorant Frequency Scheme methods for the space homogeneous Boltzmann equation, Proceedinds of the 24th International Symposium on Rarefied Gas Dynamics, Monopoli (Bari), July 10-16, 2004, Mario Capitelli Editor, American Institute of Physics Proccesing 762, p.571, Melville, New York, 2005.
- [104] G.Russo, L.Pareschi, S.Trazzi, A.A.Shevyrin, Ye.A.Bondar, M.S.Ivanov, Plane Couette Flow Computations by TRMC and MFS Methods, Proceedinds of the 24th International Symposium on Rarefied Gas Dynamics, Monopoli (Bari), July 10-16, 2004, Mario Capitelli Editor, American Institute of Physics Proceeding 762, p.577, Melville, New York, 2005.
- [105] G. Puppo, G.Russo, Staggered Finite Difference Schemes for Balance Laws, Proceedings of the 10th International Conference on Hyperbolic Problems, Osaka, Japan, September 13–17 2004, Yokohama Publishers, Inc. 101, 6-27 Satsukigaoka Aoba-ku, Yokohama 227-0053, Japan, (2006), pp.243–250.
- [106] C.Auer, F.Shuerrer, G.Russo, Adaptive energy discretization of the semiconductor Boltzmann equation, Proceedings of the 19th International Conference on Transport Theory, Budapest July 20–30, 2005, Transport Theory Statist. Phys. 36 (2007), no. 1-3, 13–42.