

CURRICULUM VITAE AND LIST OF PUBLICATIONS

• **Personal Details**

Franck Assous

Born in November 6, 1963 in Bordeaux (France)

New immigrant from August 2002

Department of Computer Sciences and Mathematics,  
Ariel University Center of Samaria, 40700, Ariel, Israel,  
and

Department of Mathematics,  
Bar-Ilan University, 52900, Ramat-Gan, Israel.

• **Education**

B.Sc. 1984 - University of Bordeaux - Department of Mathematics

M.Sc. 1986 - University of Bordeaux - Department of Mathematics

Pr. M. Langlais

Solving the 1-D Maxwell-Boltzmann equations.

Ph. D 1989 - University of Paris IX - Department of Mathematics

and Automatic

Pr. G. Chavent

Identification of a 2D stratified elastic medium  
in the elastodynamic equations

Habilitation a Diriger des Recherches

1998 – University of Toulouse – Department of Applied Mathematics –

Pr. P. Degond

Contribution to the solution of the Maxwell-Vlasov  
system of equations.

• **Employment History**

(a) Associate Professor, Department of Computer Sciences and Mathematics,

Ariel University Center of Samaria, 2003-present

and Department of Mathematics,

Bar-Ilan University, 2002-present

Associate Professor, Department of Mathematics and Applications of Physics,

University of Versailles, France, 1999-2002

Assistant Professor, Department of Applied Mathematics, ENSTA Paris,

France, 1999-2001

Teacher at the Summer school of the CEMRACS, University of Paris-Orsay,

France, July 1999

Lecturer in the Department of Applied Mathematics, ESIEE, Paris, France,  
1988, 1989, 1994

Post-doctorat, Department of Applied Mathematics, Polytechnic School,  
Palaiseau, France, 1990

Doctorat, Department of Applied Mathematics, French Institute of Petroleum,  
Rueil-Malmaison, France, 1986-1989.

(b) Researcher , Department of Applied Mathematics, C.E.A., French Atomic Energy  
Organization (CEA), France, 1990-2002.

• Educational activities

(a) Courses taught

Numerical Approximation of Ordinary Differential Equations - undergraduate  
level - ESIEE (France) - 1988,1989,1994.

Numerical Approximation of Partial Differential Equations - graduate level –  
ENSTA (France) - 1999-2001.

Models and methods for Maxwell's equations - "DEA" graduate level –  
University of Versailles (France) - 1999 – 2002 (with P. Ciarlet, Jr.)

What models for plasmas? What numerical methods for these models - graduate  
level – University of Orsay (France) – Summer School 1999 (with P.A. Raviart)

Algorithms I – undergraduate level – College of Judea&Samaria – 2004-2006.

Algorithms II – undergraduate level – College of Judea&Samaria – 2004-2006.

Numerical Methods – undergraduate level – Ariel University Center – 2004-  
2009.

Linear Algebra – undergraduate level – Ariel University Center – 2004-2009.

Partial Differential Equations - undergraduate level - College of Judea&Samaria –  
2004-2005.

Mathematics for Social Sc. – undergraduate level – College Judea&Samaria -  
2004-2005.

Algebraic Structures II. – undergraduate level – Ariel University Center - 2006-2009.

Mathematics for Economics I, II – undergraduate level – College Judea&Samaria  
- 2006-2007.

Linear Algebra I, II – undergraduate level – College of Judea&Samaria – 2006-  
2007.

Calculus I, II - undergraduate level – Ariel University Center – 2007-2009.

Discrete Mathematics - undergraduate level – Ariel University Center – 2008.

Numerical Methods for Partial Differential Equations - graduate level –  
Bar-Ilan University -2003-2009.

(b) Research students

- 1988 – G. Mimoun – M. Sc., University of Paris VI., (jointly with F. Collino.)  
 1989 – M. Zoubeidi – M. Sc., University of Paris VI., (jointly with F. Collino.)  
 1992 – E. Heintze – Ph. D., University of Paris VI. (jointly with P. Degond)  
 1994 – O. Courouge – M. Sc., Central School, Paris. (jointly with P. Degond)  
 1996 – E. Hossenlop – M. Sc., University of Bordeaux.  
 1999 – S. Labrunie – Post Doc., Polytechnic School, Palaiseau,  
 (jointly with P. Ciarlet, Jr.).  
 2002 – E. Garcia – Ph. D., University of Paris VI., (jointly with P. Ciarlet, Jr.).  
 2006 – M. Mikhaeli – M. Sc., Bar-Ilan University.  
 2007 – F. Tsipis – M. Sc., Bar-Ilan University.  
 2007 – M. Radune – M. Sc., Ben-Gurion University & Ariel University Center.  
 2008 – M. Mikhaeli – Ph. D., Bar-Ilan University.  
 2008 – F. Tsipis – Ph. D., Bar-Ilan University.  
 2008 – M. Radune – Ph. D, Ben-Gurion University & Ariel University Center.

#### • Scientific Publications

##### (a) Authored books

1. Electromagnetism in bounded domains. *Mathematical analysis, numerical methods and applications*. F. Assous and P. Ciarlet, Jr., in preparation for the Scientific Computation series of Springer-Verlag.

##### (b) Refereed articles and refereed letters in scientific journals

1. Nonlinear Elastic Inversion of Prestack Marine Seismic Data, F. Assous, B. Chalindar and F. Collino, *Proceedings of the IEEE* vol.77(6), 877-890, 1989.
2. A numerical method for the exploration of sensitivity: The case of the identification of the 2D stratified elastic medium, F. Assous and F. Collino, *Inverse Problems*, 6(4), 487-513, 1990.
3. A particle-tracking method for the 3D electromagnetic PIC codes on unstructured meshes, F. Assous, P. Degond and J. Segré, *Comp. Phys. Com.*, 72, 105-114, 1992.
4. On a Finite-Element Method for Solving the Three-Dimensional Maxwell Equations, F. Assous, P. Degond, E. Heintzé, P. A. Raviart and J. Segré, *J. Comput. Phys.*, 109-2, 222-237, 1993.
5. Modélisation et résolution numérique de faisceaux de particules chargées, A. Adolf, F. Assous, P. Degond, F. Hermeline, J. Ovadia, P.A. Raviart and J. Segré, *Revue Scientifique et Technique de la Défense*, 30, 61-69, 1995.
6. Numerical Approximation of the Maxwell Equations in Inhomogeneous Media by a  $P^l$  Conforming Finite Element Method, F. Assous, P. Degond and J. Segré, *J. Comput. Phys.*, 128, 363-380, 1996.
7. Maxwell's equations: resolution in a domain with a reentrant corner, F. Assous, P. Ciarlet, Jr. and E. Sonnendrücker, *C. R. Acad. Sci. Paris, t. 323, Série I*, 203-208, 1996.

8. A characterization of the orthogonal of  $\Delta(H^2(\Omega) \cap H^1_0(\Omega))$  in  $L^2(\Omega)$ , F. Assous and P. Ciarlet, Jr., *C. R. Acad. Sci. Paris, t. 325, Série I*, 605-610, 1997.
9. A New Scheme to Treat the Numerical Tcherenkov Instability for Electromagnetic Particle Simulations, F. Assous, P. Degond and J. Segré, *J. Comput. Phys.*, 138-1, 171-192, 1997.
10. Numerical simulations versus experimental measurements of the multipaction effect, F. Assous, V. Courtonne, C. Quine and J. Segré, *WIT Trans. on Modelling and Simulation*, Vol. 17, 673-684, 1997.
11. Results on the regularity in time of the instationary Maxwell equations, F. Assous and P. Ciarlet, Jr., *C. R. Acad. Sci. Paris, t. 327, Série I*, 719-724, 1998.
12. Resolution of the Maxwell equations in a domain with reentrant corners, F. Assous, P. Ciarlet, Jr. and E. Sonnendrücker, *RAIRO Math. Model. Numer. Anal.*, 32-3, 359-389, 1998.
13. Caractérisation de la partie singulière de la solution des équations de Maxwell dans un domaine polyédrique, F. Assous, P. Ciarlet, Jr., P.A. Raviart and E. Sonnendrücker, chap 2., *in Aspects recents en methodes numeriques pour les equations de Maxwell*, G. Cohen and P. Joly eds, Collection didactique, I.N.R.I.A. (1998).  
**REMARQUE: C EST PAS VRAIMENT UNE PUBLI AVEC REFEREE, PLUTOT UN CHAP DE BOUQUIN (CF CI DESSOUS EN ROUGE)**
14. Characterization of the singular part of the solution of steady-state Maxwell's equations in a axisymmetric domain, F. Assous, P. Ciarlet, Jr. and S. Labrunie, *C. R. Acad. Sci. Paris, t. 328, Série I*, 767-772, 1999.
15. Characterization of the singular part of the solution of Maxwell's equations in a polyhedral domain, F. Assous, P. Ciarlet, Jr., E. Sonnendrücker and P.A. Raviart, *Math. Meth. in Appl. Sc.*, 22, 485-499, 1999.
16. Numerical solution to the time-dependent Maxwell equations in two-dimensional singular domains: the Singular Complement Method, F. Assous, P. Ciarlet, Jr. and J. Segré, *J. Comput. Phys.*, 161, 218-249, 2000.
17. Contribution to the solution of the Maxwell-Vlasov system of equations, F. Assous, Habilitation a diriger les Recherches Report, University of Toulouse, 1998.
18. The solution to the time-dependent Maxwell equations with charges in a 2D nonsmooth domain, F. Assous, P. Ciarlet, Jr. and E. Garcia *C. R. Acad. Sci. Paris, t. 330, Série I*, 391-396, 2000.
19. Theoretical tools to solve the axisymmetric Maxwell equations, F. Assous, P. Ciarlet, Jr. and S. Labrunie, *Math. Meth. in Appl. Sc.*, 25, 49-78, 2002.
20. The singular complement method, F. Assous, P. Ciarlet Jr., S. Labrunie, S. Lohrengel, *Domain Decomposition Methods in Science and Engineering*, 13, 161-189, 2002.
21. Resolution of axisymmetric Maxwell equations, F. Assous, P. Ciarlet, Jr. and S. Labrunie, *Math. Meth. in Appl. Sc.* 26, 861-896, 2003
22. A new method for coalescing particles in PIC Codes, F. Assous, T. Pougeard-Dulimbert and J. Segré, *J. Comput. Phys.* 187, 550-571, 2003

23. Numerical solution to the time-dependent Maxwell equations in axisymmetric singular domains: the Singular Complement Method, F. Assous, P. Ciarlet, Jr., S. Labrunie and J. Segré, *J. Comput. Phys.*, 191-1, 147-176, 2003.
24. Singular electromagnetic fields: an inductive approach, F. Assous, P. Ciarlet, Jr. and E. Garcia, *C. R. Acad. Sci. Paris, Ser. I*, 341, p. 605-610, 2005.
25. Time-dependent Maxwell's equations with charges in singular geometries, F. Assous, P. Ciarlet, Jr., E. Garcia and J. Segré, *Comput. Methods. Applied. Mech. Engrg.*, 196(1-3), p. 665-681, 2006.
26. Vlasov Maxwell Simulations in Singular Waveguides, F. Assous and P. Ciarlet, Jr., *Lecture Notes in Comput. Sc.*, Vol. 3994, 623-630, 2006.
27. Numerical Simulation of 3D Virtual Cathode Oscillator, F. Assous, WIT Trans. on Modelling and Simulation, Vol. 42, 193-202, 2006.
28. Numerical Solution to Maxwell's Equations in Singular Waveguides, F. Assous and P. Ciarlet, Jr., *Lecture Notes in Comput. Sc.*, Vol. 4490, 235-242, 2007.
29. Investigation of sulfur transition through metal-slag phase boundary in natural moving conditions, M. Radune, A. Radune, F. Assous, M. Zinigrad, D. Eliezer, *Defect&Diffusion Forum*, Vol 273-276, 752-758, 2007.
30. Characterization of singular electromagnetic fields by an inductive approach , F. Assous, P. Ciarlet, Jr. and E. Garcia., *Int. J. Numer. Anal. Model.*, 5 (3), pp. 491-515, 2007.
31. A 3D Time Domain Electromagnetic Particle-In-Cell Code on Unstructured Grids, F. Assous, *Int. J. Model. Simul.*, 29 (3), pp. 1-6, 2009.
32. On reduced models to approximate particle beams and plasma physics problems, F. Assous, *Int. J. Math. Mod. And Meth. in Appl. Sc.*, 2 (1), pp. 48-56, 2008.
33. Solving Vlasov-Maxwell equations in singular geometries , F. Assous and P. Ciarlet, Jr., *Math. and Comput. in Simul*, Vol 79, 1078-1085, 2008.
34. A PIC Method for Solving a Paraxial Model of Highly Relativistic Beams, F. Assous and F. Tsipis, *J. Comput. Appl. Maths.* , Vol 227-1, 136-146, 2009 (available on line: <http://dx.doi.org/10.1016/j.cam.2008.07.022>)
35. A multiscale approach for solving Maxwell's equations in waveguides with conical inclusions, F. Assous and P. Ciarlet, Jr , *Lecture Notes in Comput. Sc.*, Vol. 5102, 331-340, 2008.
36. Modelling and Computer Simulation of Reagents Diffusion in High Temperature Diffusion Controlled Heterogeneous Reactions, M. Radune, A. Radune, F. Assous, M. Zinigrad, *Int. J. Comput. Mater. Sc. & Surf. Eng.*, Vol 1(4), pp.225-231, 2009.
37. Numerical paraxial approximation for highly relativistic beams, F. Assous and F. Tsipis, *Comput. Phys. Comm.* , 180, pp 1086-1097, 2009. available on line: <http://dx.doi.org/10.1016/j.cpc.2008.12.037>
38. Parallelization of a constrained three-dimensional Maxwell solver , F. Assous, J. Segré, and E. Sonnendrucker, accepted to *Lecture Notes in Computational Science and Engineering* .
39. Solving the 3D Maxwell Equations Near Conical Singularities by a Multiscale Strategy, F. Assous and P. Ciarlet Jr., accepted to *Computing Multiscale Engineering*.

40. The development of a Mathematical Model of Sulfur Diffusion in the Steel and Slag Phases in its Transition from the Steel into the Slag, M. Radune, F. Assous, M. Zinigrad, D. Eliezer, accepted for publication in *Int. J. Comput. Mater. Sc. & Surf. Eng.*

(c) Conference proceedings

1. Full elastic inversion of multioffset marine data on a stratified medium, F. Assous, and V. Richard, *59<sup>th</sup> Annual Meeting, Society of Exploration Geophysicists*, Dallas, Texas, U.S.A., 959-962, 1989.
2. Modelling of a microchannel plate working in pulsed mode, A. Mens, A. Secroun, J. Segré, F. Assous and E. Piauxt, *High-Speed Photography and Photonics*, D.L. Paisley and A. Frank, eds., Santa Fe, New Mexico, U.S.A, 132-138, 1996.
3. Gated MCP framing camera system, A. Secroun, A. Mens, J. Segré, F. Assous, E. Piauxt, J.C. Rebuffie, W. Zhu, Y. Luo, J. Cheng, C. Yang, T. Wen, D. Tang, S.H. Wuen and Z. Zheng, *Proc. SPIE, Vol. 2869*, 182-188, 1996.
4. The solution of Maxwell's equations in a non convex polyhedron. Part I: saddle-point approach and singularities, F. Assous, P. Ciarlet, Jr., P.A. Raviart, J. Segré and E. Sonnendrucker, *Mathematical and Numerical Aspects of Wave Propagation*, 364-368, SIAM, 1998.
5. Numerical solution to Maxwell's equations in singular domains: The Singular Complement Method, F. Assous, P. Ciarlet and E. Garcia, *the 5<sup>th</sup> Int. Conf. of Math. and Numer. aspects of wave propag.*, A. Bermudez et al. eds., Santiago de Compostela, Spain, 714-718, 2000.
6. 3D Microwave Modelling in Arbitrary geometry, F. Assous, *14<sup>th</sup> Applied Simulation Modelling*, M.H. Hamza Ed, Malaga, Spain, 180-185, 2005.
7. Computation of strong EM fields around a sharp conical vertex, F. Assous and P. Ciarlet, Jr., EHE06, C. Lemos Antunes Ed., Madeira, Portugal, 1.7-1.12, 2006.
8. Numerical paraxial approximation for highly relativistic beams, F. Assous and F. Tsipis, IASTED06, *14<sup>th</sup> Applied Simulation Modelling*, M.H. Hamza Ed, pp. 100-105, Rhodes, Greece, 2006.
9. Nitsche type method for approximating boundary conditions in the static Maxwell equations, F. Assous and M. Mikhaeli, *26<sup>th</sup> Modelling, Identification and Control*, L. Bruzzone Ed., pp. 402-407, Innsbruck, Austria, February 2007.
10. Numerical solution to Maxwell's equations in singular waveguides, F. Assous., *The IAENG Int. Conf. on Computer Science*, pp. 2366-2371, Hong Kong, China, March 2007.
11. A paraxial approach for electromagnetic PIC codes in highly relativistic beams, F. Assous and F. Tsipis, *Int. Conf. Numer. Analys. NumAn2007*, pp. 29-32, Kalamata, Greece, September 2007.
12. On the absorbing boundary condition for the time-dependent Maxwell equation, F. Assous, *27<sup>th</sup> Modelling, Identification and Control*, pp. 87-92, Innsbruck, Austria, February 2008.
13. Reduced models for solving particle beams and plasma physics problems, *WSEAS Am. Conf. Appl. Maths*, pp. 54-60, Harvard M.A, USA, 2008.

14. A multiscale approach for solving Maxwell's equations in waveguides with conical inclusions, *Int. Conf. Comput. Sc., Multiphysics Multiscale Systems Workshop*, Krakov, Poland, June 2008.
15. Hodge decomposition to the solution of static Maxwell's equations in a polygon, F. Assous and M. Michaeli, *Int. Conf. Numer. Analys. NumAn2008*, Kalamata, Greece, September 2008, pp.34-37.
16. The development of a Mathematical Model of Sulfur Diffusion in the Steel and Slag Phases in its Transition from the Steel into the Slag, M. Radune, F. Assous, M. Zinigrad, D. Eliezer, 5<sup>th</sup> Int. Conf. Mathematical Modeling and Computer Simulation of Material Technologies, MMT-2008, September 2008, Ariel, Israel, pp. 1-145,1-154.
17. Some paraxial approximations of Vlasov-Maxwell equations, F. Assous, 6<sup>th</sup> Vienna Conf. on Mathematical Modelling (MATHMOD 2009), I. Troch and F. Breitenecker Eds, pp. 694-699, Vienna, Austria 2009.
18. Particle methods applied in biology and chemistry, F. Assous, accepted to Mathematics & Computers in Biology & Chemistry (MBBC'09), Prague, Czech Republic 2009.
19. Improving the second order absorbing boundary condition in a 3D Maxwell's equation solver, F. Assous, accepted to *PIERS09*.
20. Control of the particle number in particle simulations, F. Assous, Computational and Mathematical Methods in Science and Engineering, CMMSE 2009, J. Vigo-Aguiar Ed., Vol I, pp.119-126, 30 June –3 July 2009.

(d) Published scientific reports and technical papers

1. Identification de milieux élastiques 1D. Part I :le problème direct, F. Assous, French Institute of Petroleum, Res. Rep. 37724-1, 1990.
2. Identification de milieux élastiques 1D. Part II :le problème inverse, F. Assous, French Institute of Petroleum, Res. Rep. 37724-2, 1990.
3. Une méthode particulière pour la résolution de l'équation de Vlasov 3D sur un maillage non structuré, F. Assous and J.Segré, CEA Res. Rep. 2694, 1992.
4. Une nouvelle version du code M3V: Application à l'étude fréquentielle de la transmission d'une onde plane à travers une plaque perforée, F. Assous and J. Segré, CEA Res. Rep. 2484, 1994.
5. Approximation numérique des équations de Maxwell pour les milieux matériels par une méthode d'éléments finis P1 conformes, F. Assous, O. Courouge, P. Degond and J. Segré, CEA Res. Rep. 2789, 1995.
6. Résolution des équations de Maxwell dans un domaine 2D avec coins rentrants: modélisation avec condition de conducteur parfait, F. Assous, P. Ciarlet, Jr. and E. Sonnendrucker, CEA Res. Rep. 2813, 1996.
7. Un nouveau schéma pour traiter l'instabilité de Tcherenkov numérique dans les simulations PIC, F. Assous, P. Degond and J. Segré, CEA Res. Rep. 2824, 1997.
8. Caractérisation de la partie singulière de la solution des équations de Maxwell dans un domaine polyédrique, F. Assous, P. Ciarlet, Jr., P.A. Raviart and E. Sonnendrucker, CEA Res. Rep. 2826, 1998.

9. Some remarks on the Maxwell's Equations in a polygonal domain, F. Assous and P. Ciarlet, Jr., CEA Res. Rep. 5845, 1999.
10. The Singular Complement Method, F. Assous, P. Ciarlet, Jr., S. Labrunie and S. Lohrengel, Preprint Institut Elie Cartan, Nancy I University, 2001.
11. Numerical Time Reversal for the wave equation, F. Assous, F. Nataf, E. Turkel, Res. Rep. on France-Israel Grant number 3608, 2008.

(e) Unrefereed professional articles and publication

1. Models and methods for Maxwell's equations (in french), F. Assous and P. Ciarlet, Jr., *ENSTA*, Paris-France, 2001. Graduate course of the University of Versailles.
2. Modèles et méthodes pour les équations de Maxwell (in french), F. Assous and P. Ciarlet, Jr., Graduate course *D11-2*, *ENSTA*, Paris - France, 2005-2006.

• **Lectures and Presentations at Meetings and Invited Seminars not Followed by Published Proceedings**

(a) Presentation of papers at conferences/meetings

1. Non linear elastic inversion of prestack marine seismic data, F. Assous, B. Chalindar and F. Collino., *Mathematical Geophysics Sixth International Seminar on Model Optimization in Exploration Geophysics*, Free University of Berlin, R.F.A, 3-6 Feb. 1988.
2. A sensitivity analysis for a hyperbolic linear problem: The case of the identification of the 2D stratified elastic medium, F. Assous and F. Collino, *Third Annual Workshop on Seismic Wave Propagation and Inversion in Heterogeneous Media*, M.I.T. Boston, U.S.A., 31 Jul.-3 Aug 1989.
3. Coupled Vlasov-Maxwell Codes on Unstructured Meshes, A. Adolf, F. Assous, P. Degond and E. Heintzé, *Fourteenth International Conference on the Numerical Simulation of Plasmas*, Annapolis, Maryland, U.S.A., Aug 1991.
4. Simulation numérique des équations de Maxwell 3D instationnaires: Résolution par éléments finis d'une formulation avec contraintes, F. Assous, P. Degond, E. Heintzé, P.A. Raviart and J. Segré, 24ème congrès d'analyse numérique, Vittel, France, 25-28 May 1992.
5. Numerical Simulation of the Time-Domain 3D Maxwell Equations by a Finite Element Approximation of a Constrained Formulation, F. Assous, P. Degond, E. Heintzé, P.A. Raviart and J. Segré, *Fifth Biennial IEEE Conference on Electromagnetic Field Computation*, Harvey Mudd College, Claermont, U.S.A., 3-5 Aug. 1992.
6. A 3D Maxwell-Vlasov Code on Unstructured Meshes Applied to the Numerical Simulation of a Photocathode Injector, A. Adolf, F. Assous, P. Degond, E. Heintzé, P.A. Raviart and J. Segré, *Fourteenth International Free Electron Laser Conference*, Kobe, Japan, 23-28 Aug. 1992.
7. Numerical Simulation of the Time-Domain 3D Maxwell Equations by a Finite Element Approximation of a Constrained Formulation, F. Assous, P. Degond, E. Heintzé, P.A. Raviart and J. Segré, *Second International Conference & Workshop on Approximations and Numerical Methods for the Solution of the Maxwell Equations*, The George Washington University, Washington D.C., U.S.A., 25-29 Oct. 1993.
8. Simulation numérique des équations de Maxwell 3D instationnaires dans des milieux matériels inhomogènes, F. Assous, O. Courouge, P. Degond, P.A. Raviart and J. Segré, 25ème congrès d'analyse numérique, Giens, France, 24-28 May 1993.



9. A 3D Code for Plasma Modelling in Arbitrary Geometries, F. Assous and J. Segré, XXVème U.R.S. I., Lille, France, 28 Aug. -5 Sept. 1996.
10. A new computational method to solve the Maxwell equations in a domain with reentrant corners, F. Assous, P. Ciarlet, Jr., J. Segré and E. Sonnendrucker, *Progress in Electromagnetics Research Symposium*, Cambridge, Massachusetts, U.S.A., 7-11 Jul. 1997.
11. A New Method to Solve the Maxwell equations in a domain with reentrant corners, F. Assous, P. Ciarlet, Jr., J. Segré and E. Sonnendrucker, *SIAM 45th Anniversary and Annual Meeting*, Stanford University, Californie, U.S.A., 14-18 Jul. 1997.
12. A New PIC Scheme to Treat the Numerical Tcherenkov Instability, F. Assous, P. Degond and J. Segré, *International Conference on Numerical Simulation of Plasmas*, Santa Barbara, Californie, U.S.A., 10-12 Feb. 1998.
13. The solution of Maxwell's equations in a non convex polyhedron, F. Assous, P. Ciarlet, Jr., P.A. Raviart, J. Segré and E. Sonnendrucker, *Fourth International Conference on Mathematical and Numerical Aspects of Wave Propagation*, Boulder, Colorado, U.S.A., Jul. 1998.
14. Solving numerically the time-dependent Maxwell equations in domains with reentrant corners, F. Assous, P. Ciarlet, Jr., J. Segré, *MAFELAP'99*, Brunel University, U.K., 22-25 Jun. 1999.
15. Solving numerically the time-dependent Maxwell equations in domains with reentrant corners, F. Assous, P. Ciarlet, Jr., J. Segré *ICIAM 99*, Edinbourg, Scotland, 5-9 Jul. 1999.
16. A domain decomposition method for solving the time-dependent Maxwell equations, F. Assous, C. Quine, J. Segré and E. Sonnendrucker, *ICIAM 99*, Edinbourg, Scotland, 5-9 Jul. 1999.
17. The Singular Complement Method, F. Assous, P. Ciarlet, Jr., S. Labrunie and S. Lohrengel, *the 13<sup>rd</sup> Domains Decomposition Int. Conf.*, Lyon, France, 2000.
18. Numerical methods for the axisymmetric singular Maxwell equations, F. Assous, P. Ciarlet, Jr., S. Labrunie, *Workshop on Numerical Simulation of Charged Particles*, Strasbourg, France, 20-21 Jun. 2001
19. A new particle coalescence technique for PIC Codes, F. Assous, J. Segré, *Workshop on Numerical Simulation of Charged Particles*, Strasbourg, France, 20-21 Jun. 2001.
20. The Singular Complement Method applied to Maxwell-Vlasov equations, F. Assous, P. Ciarlet, Jr., E. Garcia, *Workshop on Numerical Simulation of Charged Particles*, Strasbourg, France, 20-21 Jun. 2001.
21. Singular Solutions of Maxwell's equations in polyhedral domains, F. Assous, *Int. Conf. on Degenerate PDE's and Singular Geometries*, Potsdam, Germany, Aug 2004.
22. A Domain decomposition, method to parallelize a constrained 3D Maxwell solver, F. Assous, J. Segré and E. Sonnendrucker, *7<sup>th</sup> IMACS Int. Symp. on Iterative Methods in Sc. Comput.*, Toronto, 5-8 May 2005.
23. Numerical Simulation of 3D Virtual Cathode Oscillator, F. Assous, *12<sup>th</sup> Int. Confer. on Computational Methods and Experimental Measurements*, Malta, 20-22 May 2005.
24. Sulfur Transportation in Metal and Slag Phases in Desulfurization Process, M. Radune, A. Radune, F. Assous, M. Zinigrad, D. Eliezer, *3<sup>rd</sup> Int. Conf. Diff. Liquids & Solids*, Algarve, Portugal, July 2007.
25. Solving the Maxwell equations in non-convex domains, F. Assous, *Annual Conf. Israel Math. Union*, Beer-Sheva, May 2007.

26. Numerical paraxial approximation of ultrarelativistic beams, F. Tispis and F. Assous, 7<sup>th</sup> Israel Appl. and Comput. Math. Workshop, June 14, 2007.
27. Numerical solutions for the static Maxwell equations in singular two-dimensional domain, M. Mikhaeli and F. Assous, 7<sup>th</sup> Israel Appl. and Comput. Math. Workshop, June 14, 2007.
28. Sulfur transport in metal and slag phases during desulfurization process, M. Radune, A. Radune, F. Assous, M. Zinigrad, D. Eliezer, CAMPI 2007, Sami Shamoon College, May 29-30, 2007.
29. Parallelization of a constrained three-dimensional Maxwell solver, F. Assous, J. Segré, and E. Sonnendrucker, 18<sup>th</sup> Int. Conf. Dom. Decomp Meth.18., Jerusalem, Janv.2008.

(b) Seminar presentations at universities and institutions

1. Résolution des équations couplées de Maxwell-Vlasov par une méthode d'éléments finis conformes 3D, F. Assous. *Workshop Semiconducteurs et dispositifs hyperfréquences du GdR SPARCH*, ENS Cachan, France, 25 - 26 juin 1992.
2. Modélisation d'émission micro-ondes avec le code M3V de résolution des équations de Maxwell-Vlasov, F. Assous, J.Segré, *1ère Journées Codes Industrielles par suivi de particules*, Institut Galilée, University of Paris13, Villetaneuse, France, 25 Jun. 1996.
3. Quelques applications récentes d'un code Vlasov-Maxwell en 2 et 3D, F. Assous, *Workshop of the GdR SPARCH*, Ecole Polytechnique, Palaiseau, France, 19 Mar. 1996.
4. Résolution des équations de Maxwell dans un domaine 2D avec coins rentrants, F. Assous, P. Ciarlet, Jr. et E. Sonnendrucker, *1ères Journées Singulières*, Lyon, France, 21-22 Nov. 1996.
5. Prise en compte de milieux matériels pour le système de Maxwell 3D, F. Assous, *Workshop of the GdR SPARCH*, Ecole Polytechnique, Palaiseau, France, 14 Dec. 1996.
6. Résolution des équations de Maxwell dans des domaines polygonaux, F. Assous, P. Ciarlet, Jr., P.A.Raviart, J. Segré and E.Sonnendrucker, *Seminar of the J.A. Dieudonné lab.*, University of Nice, France, 20 Dec. 1997.
7. Une méthode de résolution des équations de Maxwell dans un domaine singulier, F. Assous, P. Ciarlet, Jr. And J. Segré, *2ème Journées Singulières*, Valenciennes, France, 26-27 Nov.1998.
8. Méthodes numériques pour la résolution des équations de Maxwell, F. Assous, *Seminar « Mathematical analysis and numerical simulation of charged particles »*, University of Strasbourg, France, 30 Nov. 2000
9. Resolution of the Maxwell equations in a domain with reentrant corners, F. Assous, *Bar-Ilan Mathematics Colloquium*, Bar-Ilan University, Israel, 7 Apr. 2003
10. Solving the Maxwell equations in singular bounded domains, F. Assous, *Applied Mathematics Seminar*, Tel-Aviv University, Israel, 18 Feb. 2003.
11. Some remarks on the numerical solution to the Maxwell equations, F. Assous, *Seminar on Differential Equations*, The College of Judea and Samarie, 30 Mars 2004.
12. Numerical Time Reversal, F. Assous, F. Nataf and E. Turkel, *Status Seminar on Mathematics*, French-Israeli Cooperation, 8-9 Dec. 2008.
13. Numerical Time Reversal, F. Assous, *Bar-Ilan Appl. Mathematics Colloquium*, Bar-Ilan University, Israel, 31 May. 2009

- July 2003: 2 weeks ENSTA, Paris (France).
- July 2004: August 2004 IRMA, Strasbourg University (France).
- November 2005: 1 week ENSTA, Paris (France).
- February 2007: 1 week ENSTA, Paris (France).  
1 week French Agency for Nuclear Science, Saclay (France).
- February 2008: 1 week University Paris 6, Paris (France).
- June-July 2008: 2 weeks University Paris 6, Paris (France).  
1 week ENSTA, Paris (France).
- February 2009: 1 week University Paris 6, Paris (France).
- June 2009: 1 week University Paris 6, Paris (France).

• **Awards and Research Grants**

- 1997-1999 – PROCOP Grant (joint French/German Research Program )  
"Charged particle motion in self-consistent EM fields"-  
2 years - 8000 \$ /year - 16000\$.
- 2002-2005 – Ministry of Immigrant Absorption  
"Mathematical Analysis and Numerical Methods for the Maxwell-Vlasov Equations"-  
3 years - 5500 \$.
- 2007-2009 – France/Israel Joint program in Mathematics  
" Fast and accurate simulation of Maxwell's equations in irregular domains"  
2 years – 56800 ₪ - with E. Turkel (Tel-Aviv University) and F. Nataf (University of Paris 6, France).
- 2007-2009 – Guiladi Award (Ministry of Immigrant Absorption)

Recently Submitted

- 2007-2010 - Israel Science foundation, Individual Research Grant, "Excellence citation"
- 2008-2011 - Israel Science foundation, Individual Research Grant, "Excellence citation"

• **Present Academic Activities**

Research in progress

- Handling the singularities of the Maxwell equations in an augmented variational formulation (P. Ciarlet, Jr, ENSTA, France).
- Numerical Methods to singular Laplace Problem (J. Segre, CEA, France)
- Paraxial Approximation of Vlasov-Maxwell Problem (A. Gover, Tel-Aviv University)
- Numerical methods applied to microbiology (M. Assous, Hebrew university).
- Fast and accurate simulation of Maxwell's equations in irregular domains, (E. Turkel, Tel-Aviv University, F. Nataf, University of Paris 6).
- Mathematical Modelling of tubling mill (M. Zinigrad, Ariel University Center, M. Radune, Ben-Gurion University)
- Singularities and crack problems in elasticity (Israel Military Ind.)

Articles to be published

In preparation

- Numerical methods to the singular Laplace problem in axisymmetric geometry, F. Assous, J. Segré.
- A Continuous Galerkin Approximation of the Maxwell Equations for Material Media, F. Assous, P. Degond
- Nitsche's method for handling singularities in Maxwell's equations, F. Assous, M. Mikhaeli.
- A Numeric time reversal method, F. Assous, F. Nataf, E. Turkel.
- A new paraxial model for Vlasov-Maxwell system of equations, F. Assous, F. Tsipis
- Handling singularities in the elasticity problems, F. Assous, M. Michaeli
- A particle approach for tumbling mill simulation, F. Assous, M. Radune et. al

Submitted for publication

- A domain decomposition method for the parallelization of a constrained three-dimensional Maxwell solver, F. Assous, J. Segré, and E. Sonnendrucker, submitted to *Comput. Meth. Appl. Math.*
- Joly-Mercier boundary condition for the finite element solution of 3D Maxwell equations, F. Assous, E. Sonnendrucker, submitted to *Mathematical and Computer Modelling.*
- Hodge decomposition to the solution of static Maxwell's equations in a polygon, F. Assous, M. Mikhaeli, submitted to *Applied Numerical Mathematics.*

Reviewer of several scientific journals

- J. Comput. Phys.
- Comptes Rendus Acad. Sci.
- Int. J. Modelling. Simul.
- J. Scient. Comput.
- Comput. Phys. Comm.
- Sc. Eng. Acad. Soc. (WSEAS)
- Member of the Intern. Program Committee, *IASTED Model., Ident. & Control.*
- Member of the Intern. Program Committee, *Control. & Identification.*
- Member of the Intern. Program Committee, *IEEE Comput. Sc. & Eng.*