

Damien Minenna

8 peer-reviewed publications and 16 conferences



List of publications

PEER-REVIEWED PUBLICATIONS

2018

- [1] Electromagnetic power and momentum in N-body Hamiltonian approach to wave-particle dynamics in a periodic structure
D. F. G. Minenna, Y. Elskens, F. André and F. Doveil
Europhysics Letters (EPL), **122**(4): 44002 (7pp) (2018), doi: [10.1209/0295-5075/122/44002](https://doi.org/10.1209/0295-5075/122/44002).

2019

- [2] The traveling-wave tube in the history of telecommunication
D. F. G. Minenna, F. André, Y. Elskens, J-F. Auboin, F. Doveil, J. Puech and É. Duverdier
The European Physical Journal H, **44**(1): 1-36 (2019), doi: [10.1140/epjh/e2018-90023-1](https://doi.org/10.1140/epjh/e2018-90023-1).
Front cover of the journal issue.
Press article: "Traveling-wave tubes : The unsung heroes of space exploration", by Abigail Beall. Available on [Springer.com](https://www.springer.com), [EPJH Highlight](https://www.epjh.com), [EurekAlert!](https://www.eurekalert.com), [ScienceDaily.com](https://www.sciencedaily.com), and [Phys.org](https://www.phys.org).
Press article: "What are traveling-wave tubes and how important are they in space exploration?", by Edsel Cook on [Space.news](https://www.space.news).
Press article: "Highlights", *Europhysics News (EPN)*, **50**(3): 9 (2019), url: europhysicsnews.org/vol-50-no-3-highlights.
- [3] Recent discrete model for small-signal analysis of traveling-wave tubes
D. F. G. Minenna, A. G. Terentyuk, Y. Elskens, F. André and N. M. Ryskin
Physica Scripta, **94**(5): 055601 (8pp) (2019), doi: [10.1088/1402-4896/ab060e](https://doi.org/10.1088/1402-4896/ab060e).
- [4] DIMOHA: a time-domain algorithm for traveling-wave tube simulations
D. F. G. Minenna, Y. Elskens, F. André, A. Poyé, J. Puech and F. Doveil
IEEE Transaction on Electron Devices, **66**(9): 4042-4047 (2019), doi: [10.1109/TED.2019.2928450](https://doi.org/10.1109/TED.2019.2928450).

2020

- [5] Electromagnetic momenta for wave-particle systems in vacuum waveguides: Universality of the Abraham-Minkowski dilemma for photon momenta beyond dielectric materials
D. F. G. Minenna, Y. Elskens, F. Doveil and F. André
The European Physical Journal D, **74**(5): 103 (2020), doi: [10.1140/epjd/e2020-100640-6](https://doi.org/10.1140/epjd/e2020-100640-6).
- [6] Impact of the target holder on return currents and GHz electromagnetic pulses in short-pulse laser interactions
D. F. G. Minenna, A. Poyé, P. Bradford, N. Woolsey and V. T. Tikhonchuk
Physics of Plasmas, **27**(6): 063102 (2020), doi: [10.1063/5.0006666](https://doi.org/10.1063/5.0006666).
- [7] Technology and Assembly of a W-band Traveling Wave Tube for New 5G High Capacity Networks
F. André, J-C. Racamier, R. Zimmermann, T. Le, V. Krozer, G. Ullisse, D. F. G. Minenna, R. Letizia and C. Paoloni
IEEE Transaction on Electron Devices, **67**(7): 2919 - 2924 (2020), doi: [10.1109/TED.2020.2993243](https://doi.org/10.1109/TED.2020.2993243).

2021

- [8] Nonstationary discrete theory of excitation of periodic structures and its application for simulation of traveling-wave tubes (in Russian)
N. M. Ryskin, A. G. Rozhnev, D. F. G. Minenna, Y. Elskens and F. André
Izvestiya VUZ. Applied Nonlinear Dynamics, **29**(1): 10-34 (2021), doi: [10.18500/0869-6632-2021-29-1-10-34](https://doi.org/10.18500/0869-6632-2021-29-1-10-34).

Submitted

- [9] Time simulation of the nonlinear wave-particle interaction in meters long traveling-wave tubes
D. F. G. Minenna, K. Aliane, Y. Elskens, A. Poyé, F. André, J. Puech and F. Doveil
- [10] Many-particle models and short pulse amplification in traveling wave tubes
K. Aliane, Y. Elskens, F. André and D. F. G. Minenna

THESIS

- [11] D. F. G. Minenna, *Modélisation hamiltonienne N -corps de l'échange de moment dans l'interaction onde-particule non-linéaire*, (Ph.D. thesis, Aix-Marseille Université, 2019), url : <https://tel.archives-ouvertes.fr/tel-02479923v1>.
🏆 2019 Thesis prize, from the Doctoral School "Physics and Sciences of the Matter"

CONFERENCES

(Speaker)

2017

- [12] Hamiltonian description of electron-wave interaction for time domain simulations applied to traveling-wave tubes **(Poster)**
D. F. G. Minenna, Y. Elskens and F. André
9th ITER International School (IIS 2017), Aix-en-Provence, France, March 2017.
- [13] Electron-wave momentum exchange and time domain simulations applied to traveling wave tube **(Oral)**
D. F. G. Minenna, Y. Elskens and F. André
18th IEEE International Vacuum Electronics Conference (IVEC 2017), London, U.K., April 2017.
Proceedings: *Proceedings of the 18th IEEE Int. Vac. Elec. Conf.* (IEEE, Piscataway, NJ, 2017), doi: [10.1109/IVEC.2017.8289689](https://doi.org/10.1109/IVEC.2017.8289689).
- [14] Degree-of-freedom reduction for nonlinear N -body wave-particle interaction **(Poster)**
D. F. G. Minenna, Y. Elskens and F. André
Collisionless Boltzmann (Vlasov) Equation and Modeling of Self-Gravitating Systems and Plasmas, CIRM, Marseille, France, October 2017.

2018

- [15] Wave-Particle Interaction studied in a Traveling Wave Tube **(Invited oral)**
F. Doveil, Y. Elskens and D. F. G. Minenna
19th International Congress on Plasma Physics (ICPP 2018), Vancouver, Canada, June 2018.
- [16] Interaction onde-particule et modélisation en domaine temps des tubes à ondes progressives **(Poster)**
D. F. G. Minenna, F. André, F. Doveil, Y. Elskens and J. Puech
18^e Journées CNES Jeunes Chercheurs (JC²), Toulouse, France, October 2018.

2019

- [17] Description N -corps de l'interaction onde-particule dans une structure périodique **(Poster)**
D. F. G. Minenna, Y. Elskens, F. André, A. Poyé and F. Doveil
22^e Rencontre du Non-Linéaire, Paris, France, March 2019.
Proceedings: *Comptes-rendus de la 22^e Rencontre du Non Linéaire (RNL)*, Paris 2019 (Non-Linéaire Publications, Saint-Étienne du Rouvray, 2019), p. 45-50, url: <http://nonlineaire.univ-lille1.fr/SNL/comptes-rendus/2019/>.
- [18] DIMOHA: Traveling-wave tube simulations including band edge and multiple-carriers operations **(Oral)**
D. F. G. Minenna, Y. Elskens, F. André, J. Puech, A. Poyé, F. Doveil and T. Pereira
20th IEEE International Vacuum Electronics Conference (IVEC 2019), Busan, South Korea, April 2019.
Proceedings: *Proceedings of the 20th IEEE Int. Vac. Elec. Conf.* (IEEE, Piscataway, NJ, 2019), doi: [10.1109/IVEC.2019.8744984](https://doi.org/10.1109/IVEC.2019.8744984).
- [19] Many body description of the wave-particle interaction **(Oral)**
D. F. G. Minenna, Y. Elskens, F. André, J. Puech, A. Poyé and F. Doveil
Annual Scientific Meeting of ED 352, Marseille, France, June 2019.
- [20] Nonlinear wave-particle interaction in helix traveling-wave tubes using N -body simulations in time domain **(Oral)**
D. F. G. Minenna, Y. Elskens, F. Doveil, F. André, and A. Poyé
46th European Physical Society Conference on Plasma Physics (EPS 2019), Milan, Italia, July 2019.
Proceedings: [EPS2019-O3.402](#) (4pp).
- [21] Practical applications of the self-consistent hamiltonian N -body approach for wave-particle interactions **(Oral)**
D. F. G. Minenna, Y. Elskens, F. Doveil, A. Poyé and F. André
6th International Workshop on the Theory and Applications of the Vlasov Equation (VLASOVIA 2019), Strasbourg, France, July 2019, fellowship earned from the organization.
- [22] Impact du temps de chargement des cibles par lasers et du courant de neutralisation sur les impulsions électromagnétiques GHz **(Poster)**
D. F. G. Minenna, A. Poyé and V. T. Tikhonchuk
Forum Interaction Laser Plasma 2019 (Forum-ILP 2019), Fréjus, France, October 2019.
- [23] Observation and simulation of wave particle interaction in a Traveling Wave Tube upgrade **(Authors' withdraw)**
M.-C. De Sousa, D. F. G. Minenna, F. Doveil, and Y. Elskens,
61st Annual Meeting of the APS Division of Plasma Physics, Fort Lauderdale, Florida, October 2019.

2020

- [24] Progress with DIMOHA for fast time-domain simulations of traveling-wave tubes **(Oral)**
F. André, D. F. G. Minenna, K. Aliane, Y. Elskens, A. Poyé, J. Puech and F. Doveil
21th IEEE International Vacuum Electronics Conference (IVEC 2020), Monterey, California, October 2020.
- [25] Nonlinear plasma kinetic theory and applications to plasma instabilities **(Oral)**
D. Bénisti, O. Morice, M. Tacu, A. Debayle and D. Minenna,
4th Asia-Pacific Conference on Plasma Physics (AAPPS-DPP2020), remote e-conference, October 2020.
- [26] Applications d'un modèle hamiltonien à N corps de l'interaction onde-particule non-linéaire **(Postponed conference)**
D. F. G. Minenna, Y. Elskens, K. Aliane, M.-C. De Sousa, A. Poyé, F. André and F. Doveil,
16^e Congrès de la division Plasmas de la Société Française de Physique SFP, Marseille, 2020.
- [27] Modélisation de tubes à ondes progressives en domaine temporel avec une approche à N corps **(Postponed conference)**
K. Aliane, Y. Elskens, F. André and D. F. G. Minenna,
16^e Congrès de la division Plasmas de la Société Française de Physique SFP, Marseille, 2020.

2021

- [28] Time-domain non-linear simulations of a 3 meter long traveling wave tube **(Oral)**
K. Aliane, D. F. G. Minenna, Y. Elskens, F. André and A. Poyé
21th IEEE International Vacuum Electronics Conference (IVEC 2021), remote e-conference, 2021.
- [29] Méthode de tracé de rayon pour la résolution de l'interaction onde-onde multiple appliquée à la diffusion Raman stimulée **(Poster)**
D. F. G. Minenna, M. Tacu, D. Bénisti and A. Debayle
24^e Rencontre du Non-Linéaire, Paris, France, March 2021.
- [30] Efficient many-body modeling of wave-particle interaction in a periodic structure **(Poster)**
D. F. G. Minenna, K. Aliane, Y. Elskens, F. André, A. Poyé, M.-C. De Sousa and F. Doveil
International joint meeting of the 8th International Conference on Nonlinear Science and Complexity (NSC20-21) and the 4th International Conference on Chaos, Complexity and Transport (CCT20-21), Marseille, May 2021.
- [31] The ray-in-cell method to investigate nonlinear wave propagation and wave-wave coupling **(Authors' withdraw)**
D. F. G. Minenna, M. Tacu, D. Bénisti and A. Debayle
47th European Physical Society Conference on Plasma Physics (EPS 2019), remote e-conference, July 2021.

SOFTWARE DEPOSIT

2019

- [32] DIMOHA
Certified by the Agence de Protection des Programmes (APP)
IDDN: IDDN.FR.001.110018.000.R.P.2019.000.20600
Invention disclosure: Damien Minenna 28%, Frédéric André 28%, Yves Elskens 28%, Alexandre Poyé 16%.

WORKSHOP (1ST AUTHOR)

- Feb 2017 Hamiltonian description of the electron-wave interaction and time domain simulations
Laboratoire de Physique des Interactions Ioniques et Moléculaires (PIIM), Aix-Marseille Université -CNRS, UMR 7345, Marseille, France
- Mar 2017 Hamiltonian description of the electron-wave interaction and time domain simulation
Thales Electron Devices, Vélizy-Villacoublay, France
- Oct 2017 A discrete model to study the electron-wave interaction and time domain simulations
Laboratoire de Physique des Interactions Ioniques et Moléculaires (PIIM), Sète, France
- May 2018 Degree-of-freedom reduction & N-body Hamiltonian of the wave-particle interaction
Laboratoire de Physique des Interactions Ioniques et Moléculaires (PIIM), Aix-Marseille Université -CNRS, UMR 7345, Marseille, France
- Jun 2018 Update on the Abraham-Minkowski dilemma
Laboratoire de Physique des Interactions Ioniques et Moléculaires (PIIM), Aix-Marseille Université -CNRS, UMR 7345, Marseille, France
- Jun 2018 A discrete model to study the wave-particle interaction and time domain simulations
Thales Electron Devices, Vélizy-Villacoublay, France

- Apr 2018 N-body self-consistent hamiltonian approach for the wave-particle interaction in periodic structures and the Abraham-Minkowski dilemma in plasmas and waveguides
Centre de Physique Théorique (CPT), Aix-Marseille Université-Université de Toulon-CNRS, UMR 7332, Marseille, France
- Feb 2020 Modélisation hamiltonienne à N-corps de l'échange de moment dans l'interaction onde-article
Commissariat à l'énergie atomique et aux énergies alternatives (CEA), Bruyères-le-Châtel, France
- Oct 2020 Modélisation non-linéaire de l'interaction onde-particule dans un tube à ondes progressives de 3 mètres
Commissariat à l'énergie atomique et aux énergies alternatives (CEA), Gif-sur-Yvette, France
- Jan 2021 Modélisation de l'interaction onde-particule et applications à des tubes à ondes progressives
Laboratoire de Physique et Chimie de l'Environnement et de l'Espace (LPC2E), CNRS, Univ. Orléans, Orléans, France

PEER REVIEW SUMMARY

Reviews for:

- *Semiconductor Science and Technology (Semicond. Sci. Technol.)*, IOP Publishing
- *The European Physical Journal Plus (Eur. Phys. J. P)*, Società Italiana di Fisica and Springer-Verlag
- *Physics of Plasmas (Phys. Plasmas)*, AIP Publishing

🏆 IOP Trusted Reviewer Award