



## MOHAMMED SHIHAB

الاسم: محمد أحمد شهاب

الجنسية: مصرى

تاريخ الميلاد: ١١ سبتمبر ١٩٧٩

التخصص: الفيزياء النظرية

التخصص الدقيق: فيزياء البلازما النظرية وتطبيقاتها

تقدير الدكتوراه: امتياز مع مرتبة الشرف من جامعه رور- بوخم بدوله ألمانيا

تاريخ الحصول على الدكتوراه: ٣ يوليو ٢٠١٣

الوظيفة: استاذ مشارك الفيزياء النظرية - كلية العلوم - جامعة طنطا.

الاعباء التدريسية: تدريس عدد من مقررات الفيزياء النظرية مثل الالكتروديناميك و ميكانيكا الكم والاشراف على المعامل الطلابية للفيزياء التجريبية ومعمل الفيزياء الحاسوبية

الجوائز: جازره جامعه طنطا التشجيعية لعام ٢٠١٩

أعمال الجودة بالكلية: منسق عام الجودة بالقسم والمنسق الرئيسى لمعيار البرامج التعليمية والاكاديميه بالكلية ٢٠١٦-٢٠٢٠

تنظيم المؤتمرات: مشارك فى تنظيم عدد من المؤتمرات والندوات بالكلية وعلى مستوى الجامعة

أمين لجنة تعديل اللانحة الدراسية لكليات العلوم والتربية لعام ٢٠١٩-٢٠٢١

عضو بأعمال الكنترول وتنظيم الامتحانات من ٢٠١٦ الى الان وعضو لجنة التصحيح الالكتروني لعام ٢٠٢٠، حضور عدد من الدورات عن نظام الساعات المعتمدة والاعتماد المؤسسي والبرامج.

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<https://scholar.google.com/citations?user=l2fo3tAAAAAJ&hl=ar>



[https://www.researchgate.net/profile/Mohammed\\_Shihab](https://www.researchgate.net/profile/Mohammed_Shihab)

خبرة جيدة في التعامل مع عدد من برامج التعليم عن بعد مثل

**Moodle, Microsoft Team, Zoom, YouTube**

مرفق لينك قناتي على اليوتيوب لشرح بعض اجزاء المحاضرات في عدة مقررات

<https://www.youtube.com/channel/UC2fj989IMNIResfa1niYuVQ>

بعض المحاضرات تم القاها باللغة الانجليزية.

يوجد لينكات بعض المحاضرات التي وفقني الله بالقاها في مدرسة البلازما والتي تعقد سنويا في مصر ويشارك بها طلاب مصريين وأشقاننا العرب.

## EXPERIENCE POSITIONS

**Jul. 2019 – Present**

Associate Professor • Egypt • Tanta University.

**Sep. 2016 – Jul2019**

Assistant Professor • Egypt • Tanta University.

**Sep. 2014 – Aug. 2016**

Assistant Professor • Germany • Rostock University.

**Jan. 2014 – Aug. 2014**

Assistant Professor • Egypt • Tanta University.

**Sep. 2013 – Dec. 2013**

Internship • USA (California) • Lam Research Corporation.

**Jul. 2009 – Sep. 2013**

PHD student (researcher) • Germany • Ruhr University Bochum.

**Oct. 2007 – Jun. 2009**

Assistant Lecturer • Egypt • Tanta University.

**Nov. 2002 – Oct. 2007**

Demonstrator • Egypt • Tanta University.

## RESEARCH EXPERIENCE

I have a good research experience with various interdisciplinary topics, such as, the physics and applications of low temperature plasmas, laser-matter interaction, warm dense matter, X-ray Thomson scattering, density functional theory, and plasma spectroscopy. I'm familiar with different fluid and kinetic plasma simulation codes.

## COMPUTER AND PROGRAMMING SKILLS

I have a long experience with different programming languages and interfaces, such as, MATLAB, PYTHON, MATHEMATICA, C++, and FORTRAN. I'm familiar with two operating systems: windows

and ubuntu, and their programs, such as, Microsoft-office, Latex, Wine, open-office, .... etc.

## TEACHING EXPERIENCE

I currently teach different courses for undergraduate and postgraduate students, such as, Quantum Mechanics, Statistical Physics, Electrodynamics and Electromagnetic Theory, Numerical Methods, Computational Physics, Electronics, Thermodynamics, and Plasma Physics. In addition, I could teach other physics and electrical engineering courses.

## EDUCATION

### **Rostock University, Rostock, Germany**

- Post-Doc in the group of Prof. Dr. Ronald Redmer in the field of “Kinetic and radiation-hydrodynamic simulation of laser matter interaction”.
- Advisor homepage:  
<https://www.statistische.physik.uni-rostock.de/>

### **Ruhr University Bochum, Bochum, Germany**

- Ph. D. in theoretical electrical engineering with grade “Distinction” and GPA 100%.
- Thesis Topic is “The dynamics of plasma sheaths”.
- Advisor: Prof. Dr. rer. nat Ralf peter Brinkmann.
- Advisor homepage:  
<http://www.tet.rub.de/lehrstuhl/mitarbeiter/brinkmann/>
- My homepage in this group:  
<http://www.tet.rub.de/lehrstuhl/mitarbeiter/mohammed-shihab/>

### **Tanta University, Tanta, Egypt**

- M. Sc. in Plasma Physics, Aug 2007.
- Thesis topic is “On the theory of short-wavelength lasers for recombining plasmas”.
- Advisor: Prof. Dr. Nabil El-Siragy
- Advisor homepage:  
[https://www.researchgate.net/profile/Nabil\\_Siragy](https://www.researchgate.net/profile/Nabil_Siragy)

### **Tanta University, Tanta, Egypt**

- B. SC. in Physics, Faculty of Science, 2002.
- B. SC. in Physics & Chemistry, Faculty of Education, 2000.

## COMMUNICATION

I acquired good communication skills from doing research with different groups in some universities, such as, Stanford University, Rostock University, XFEL Hamburg, Ruhr University Bochum, and Brandenburg University of Technology. I have the ability to communicate scientists and students face to face and/or telephone-conference, and/or skype ....

I gave many scientific presentations and posters in different countries, such as, Egypt, Germany, France, England, Netherland, and USA. I speak Arabic and English fluently and have a good level in German.

## AWARDS

August 2002, Students award for the best student in Physics Department, Faculty of Science, Tanta University.

August 2013, A ward for the successful participation in German Physicists Society conference (DER DPG-TAGUNG 2013, JENA, GERMANY).

Encouragement award for the academic year 2018-2019 from Tanta University.

## PROJECTS

My research in Germany has been funded via several projects: Plasma-Technology-grid, the DFG via the collaborative research centre SFB-TR87, the DFG within the SFB-652, and by the BMBF within the FSP-302. The fund of these projects has been acknowledged in my publications.

### Current Projects

1. Simulation of the interaction of intense ultrashort X ray laser pulses with micro sized Al targets, funded by Academy of Scientific Research & Technology (ASRT).
2. Simulation of RF capacitive coupled plasma reactors.
3. Computational Fluid Dynamics of industrial plasmas.
4. Quantitative analysis of tumors, (in this project, I'm responsible for the statistical analysis).

5- Simulation of atmospheric plasma jets for skin cancer treatment, a scientific mission to Brandenburg University (Germany). But the mission is postponed due to Coronavirus epidemic.

## PUBLICATIONS

1. M. Shihab, Th. Bornath, R. Redmer, Ionization dynamics of dense matter generated by intense ultrashort X-ray pulses, *Contrib. Plasma Phys.* 2019, DOI: 10.1002/ctpp.201800156.
2. M. Shihab, Non-linear lumped model circuit of capacitively coupled plasmas at the intermediate radio-frequencies, *Physics Letters A* **382**, 1609(2018).
3. U. Zastra et al, A sensitive EUV Schwarzschild microscope for plasma studies with sub-micrometer resolution, *Rev. Sci. Instrum.* **89**, 023703(2018).
4. R. Irsig, M. Shihab, L. Kazak, T. Bornath, J. Tiggesbaumker, R. Redmer, and K.-H. Meiwes-Broer, The interaction of intense femtosecond laser pulses with argon microdroplets studied near the soft x-ray emission threshold, *J. Phys. B: At. Mol. Opt. Phys.* **51**, 024006(2018).
5. M. Shihab and T. Mussenbrock, Kinetic investigation of the ion angular distribution in capacitive radio-frequency plasmas, *Phys. Plasmas* **24**, 113510 (2017).
6. B.B.L. Witte, M. Shihab, S.H. Glenzer, and R. Redmer, Ab initio simulations of the dynamic ion structure factor of warm dense lithium, *Phys. Rev. B* **95**, 144105(2017).
7. M. Shihab, Th. Bornath, and R. Redmer, The interaction of intense ultrashort laser pulses with cryogenic planar He jets, *Plasma Phys. Control. Fusion*, **59**, 045006(2017).
8. M. Shihab, G.H. Abou-Koura<sup>1</sup>, N.M. El-Siragy, Energy relaxation of intense laser pulse produced plasmas, *Appl. Phys. B* **122**:146 (2016), DOI 10.1007/s00340-016-6419-7.
9. K.-U. Plagemann, Hannes R Ruter, T. Bornath, M. Shihab, M.P. Desjarlais, C. Fortmann, S.H. Glenzer, and R. Redmer, Ab initio calculation of the ion feature in x-ray Thomson scattering. *Phy. Rev. E.* **92**, 013103(2015).
10. A.E. Elgendy, H. Hateffnia, T. Hemke, M. Shihab, A. Wollny, D. Eremin, T. Mussenbrock, and R.P. Brinkmann. An algebraic RF

sheath model for all excitation waveforms and amplitudes, and all levels of collisionality. arXiv:1306.1664v1 2013.

11. M. Shihab, A. T. Elgendy, I. Korolov, A. Derzsi, J. Schulze, D. Eremin, T. Mussenbrock, Z. Donk\_o, and R. P. Brinkmann. Kinetic simulation of the sheath dynamics in the intermediate radio-frequency regime. *Plasma Sources Sci. Technol.* **22**, 055013(2013).

12. J. Trieschmann, M. Shihab, D. Szeremley, A. Elgendy, S. Gallian, D. Eremin, R.P. Brinkmann, and T. Mussenbrock. Ion energy distribution functions behind the sheaths of magnetized and non- magnetized radio frequency discharges. *J. Phys.D: Appl. Phys.* **46**, 084016(2013).

13. M. Prenzel, A. Kortmann, A. von Keudell, F. Nahif, J. M. Schneider, M. Shihab, and R. P. Brinkmann. Formation of crystalline Al<sub>2</sub>O<sub>3</sub> induced by variable substrate biasing during reactive magnetron sputtering. *J. Phys. D: Appl. Phys.* **46**, 084004(2013).


14. M. Shihab, D. Ziegler, and R. P. Brinkmann. Fast, kinetically self-consistent simulation of RF modulated plasma boundary sheaths. *J. Phys. D: Appl. Phys.* **45**, 185202(2012).

15. O.M.Hemeda, B.I.Salem, H.Abdelfatah, G.Abdelsatar, M.Shihab, Dielectric and ferroelectric properties of barium zirconate titanate ceramics prepared by ceramic method, *Physica B: Condensed Matter* **674**, 411680(2019).

16- Assessment OF tumor heterogeneity by FDG-PET/CT In patients with Hepatocellular Carcinoma, Houseni M, Shihab M , Elhussiny F, Saad S and Shehata M., *Tumori journal*, Volume: 104 issue: 3\_suppl, page(s): 3-11 (2018) 10-11.

17- Advanced intra-tumoural structural characterisation of hepatocellular carcinoma utilising FDG-PET/CT: a comparative study of radiomics and metabolic features in 3D and 2D, M. houseni, M. S. Mahmoud, S. Saad, F. Elhussiny, M. Shihab, *Polish Journal of Radiology* 2021(86):63-72, DOI:10.5114/pjr.2021.103239.

18- Evolution of ion-acoustic soliton waves in Venus's ionosphere permeated by the solar wind, M. S. Afify, I. Elkamash, M. Shihab, W.M. Moslem, *Advances in Space Research*, DOI: 10.1016/j.asr.2021.02.037.



19- Simulation of the interaction of intense ultrashort X-ray laser pulses with micro-sized Al targets, M. Shihab, Y. Adel, N. M. El-Siragy, Results in Physics 24(e59):104097 (2021)

#### CONFERENCE PROCEEDINGS

1- M. Shihab, D. Ziegler, T. Baloniak, A. von Keudell, R.P. Brinkmann, The asymmetric dynamics of the intermediate RF sheath, Proceedings of the 30th International Conference on Phenomena in Ionized Gases (ICPIG) Aug 28th - Sep 2<sup>nd</sup> 2011, Belfast, Northern Ireland.

2. M. Shihab, R.P. Brinkmann, and B. Schroder. Semi-analytical model for the sheath dynamics in the intermediate regime, Proceedings of the 31st International Conference on Phenomena in Ionized Gases (ICPIG).

## POSTERS AND PRESENTATIONS

### 2020

#### 1- Electrostatics

Mohammed Shihab, 5<sup>th</sup> plasma summer school, 10-14 March 2020, Port-Said, Egypt <https://www.egyplasma.com/school/5th-2020/>

[https://www.youtube.com/watch?v=EzhDKpIxWKg&feature=youtu.be&list=PLgcm\\_xZSaoiBGmIerj6t3351U\\_2ZF49AQ](https://www.youtube.com/watch?v=EzhDKpIxWKg&feature=youtu.be&list=PLgcm_xZSaoiBGmIerj6t3351U_2ZF49AQ).

[https://www.youtube.com/watch?v=4LVRqko0AIs&feature=youtu.be&list=PLgcm\\_xZSaoiBGmIerj6t3351U\\_2ZF49AQ](https://www.youtube.com/watch?v=4LVRqko0AIs&feature=youtu.be&list=PLgcm_xZSaoiBGmIerj6t3351U_2ZF49AQ)

#### 2- Magnetostatics

Mohammed Shihab, 5<sup>th</sup> plasma summer school, 10-14 March 2020, Port-Said, Egypt.

[https://www.youtube.com/watch?v=-khfISqPGv0&feature=youtu.be&list=PLgcm\\_xZSaoiBGmIerj6t3351U\\_2ZF49AQ](https://www.youtube.com/watch?v=-khfISqPGv0&feature=youtu.be&list=PLgcm_xZSaoiBGmIerj6t3351U_2ZF49AQ)

#### 3- Electromagnetics

Mohammed Shihab, 5<sup>th</sup> plasma summer school, 10-14 March 2020, Port-Said, Egypt.

<https://www.youtube.com/watch?v=0lbBmArwq04&feature=youtu.be>

#### 4- Electrical models of plasma discharges

Mohammed Shihab, 5<sup>th</sup> plasma summer school, 10-14 March 2020, Port-Said, Egypt.

[https://www.youtube.com/watch?v=M5WBsw6rT10&feature=youtu.be&list=PLgcm\\_xZSaoiBGmIerj6t3351U\\_2ZF49AQ](https://www.youtube.com/watch?v=M5WBsw6rT10&feature=youtu.be&list=PLgcm_xZSaoiBGmIerj6t3351U_2ZF49AQ)

### 2019

1- [Plasma and Nanotechnology](#)

Mohammed Shihab, 4<sup>th</sup> plasma summer school, 10-13 March 2019, Port-Said, Egypt <https://plamaschool.wordpress.com/4th-2019/>.

2- [Warm Dense matter](#)

Mohammed Shihab, 4<sup>th</sup> plasma summer school, 10-13 March 2019, Port-Said, Egypt <https://plamaschool.wordpress.com/4th-2019/>.

**2018**

1- [Laser-plasma interaction](#)

Mohammed Shihab, 3<sup>rd</sup> plasma summer school, 11-14 March 2018, Port-Said, Egypt, <https://plamaschool.wordpress.com/3rd-2018/>.

2- [Plasma Simulation](#)

Mohammed Shihab, 3<sup>rd</sup> plasma summer school, 11-14 March 2018, Port-Said, Egypt, <https://plamaschool.wordpress.com/3rd-2018/>.

3- [Optimum radio-frequency plasma sheath parameters for nanoscale profiles etching](#)

Mohammed Shihab, 1<sup>st</sup> International Conference Nanotechnology: Theory and applications, 10-13 Dec 2018, Cairo, Egypt, Oral Presentation.

4- [X- ray Thomson scattering of inhomogeneous and non-equilibrium dense plasmas.](#)

Mohammed Shihab, Yasmine Adel, and Nabil El-Siragy, Conference on Mathematics, Statistics & Information Technology (IMSIT), 20-22 Dec. 2018, Tanta, Egypt, Oral Contribution.

**2017-2009**

1- [Thomson scattering from dense non-equilibrium plasmas.](#)

Th. Bornath, T.N. Beuermann, C. Cordes, M. Shihab, R. Redmer, International Conference of Strongly Coupled Coulomb Systems, 30 July- 4 Aug. 2017, Kiel, Germany, oral contribution.

2- [Ionization Dynamics in intense ultrashort laser-jet interaction.](#)

Mohammed Shihab, Thomas Bornath, and Ronald Redmer, DPG Frühjahrstagung, 29 Feb - 4 March 2016, Hannover, Germany, Oral Contribution.

3- [Ab initio simulations of the dynamic ion structure factor of warm dense lithium.](#)

Ronald redmer, Bastian Witte, Mohammed Shihab, Siegfried Glenzer, 5<sup>th</sup> joint Workshop on High Pressure, planetary and plasma physics 14-16 Sep. 2016, DESY & EUROPEAN XFEL, Hamburg, Germany, Oral Contribution.

4- [Collisional-Radiative Model for the free expansion of the plasma plume.](#)

Mohammed Shihab, Conference on Mathematics, Statistics & Information Technology (IMSIT), 20-22 Dec. 2016, Tanta, Egypt, Oral Contribution.

5- [Parametric study of the plasma parameters on the ion angular distribution and the direct ion heat flux in plasma etching.](#)

Mohammed Shihab, Conference on Mathematics, Statistics & Information Technology (IMSIT), 20-22 Dec. 2016, Tanta, Egypt, Oral Contribution.

6- [Thomson Scattering from Warm Dense Matter.](#)

*Mohammed Shihab, Kai-Uwe Plagemann, Hannes R. Ruter, Thomas Bornath, Wolf-Dietrich Kreaft, Carsten Fortmann, Siegfried H. Glenzer, and Ronald Redmer, DPG Frühjahrstagung, 2-5 March 2015, Bochum, Germany, Oral Contribution.*

7- [Kinetic Simulation of the interaction of intense ultra-short laser pulse with H and He jets.](#)

Mohammed Shihab, Thomas Bornath, and Ronald Redmer. Conference on Correlation Effects in Radiation Fields (CERF), 13-18 Sep. 2015, Rostock, Germany, Poster.

8- [Ab initio simulation of Warm Dense Matter.](#)

Ronald Redmer, Kai-Uwe Plagemann, Hannes R. Ruter, Thomas Bornath, Carsten Fortmann, and Siegfried H. Glenzer, PNP 15 "non-ideal plasmas", 30 Aug. - 4 Sep. 2015, Almaty, Kazakhstan, Oral Contribution.

9- [Modeling of dual frequency capacitive discharges with pulse-modulated power input.](#)

Schabnam Naggary, Efe Kemaneci, Mohammed Shihab, Ralf Peter Brinkmann, Zoltan Kovacs, Mustafa Megahed - 68th Annual Gaseous Electronics Conference/9th International Conference on Reactive Plasmas/33rd Symposium on Plasma Processing, Oct. 12-15 2015. Honolulu, USA, Poster.

10- [Characterization of capacitively coupled radio frequency discharges.](#)

Schabnam Naggary, Mohammed Shihab, Frank Atteln, Ralf Peter Brinkmann, WELTPP-16, 21 - 22 Nov. 2013, Kerkrade, The Netherlands, Poster.

11- [Evaluation of Equivalent Circuit Models for Plasma Bulk Characterization by Comparing IEDF Predictions with those of a Spatially Resolved CCP Model.](#)

Schabnam Naggary, Mohammed Shihab, Frank Atteln, Ralf Peter Brinkmann, Mustafa Megahed - 66th Annual Gaseous Electronics Conference (GEC), 30 Sep. - 04 Oct. 2013, Princeton (New Jersey), USA, Poster.

12- [An algebraic RF sheath model for all excitation waveforms and amplitudes, and all levels of collisionality.](#)

Ralf Peter Brinkmann, Abd Elfattah Elgendy, Homayoun Hatefinia, Mohammed Shihab, Torben Hemke, Alexander Wollny, Denis Eremin, Thomas Mussenbrock - 66th Annual Gaseous Electronics Conference (GEC), 30 Sep. - 04 Oct. 2013, Princeton (New Jersey), USA, Oral Contribution.

13- [Ion Energy Distribution Functions in Magnetized Capacitively Coupled RF Discharges.](#)

Jan Trieschmann, Mohammed Shihab, Daniel Szeremley, Abd Elfattah Elgendy, Sara Gallian, Denis Eremin, Ralf Peter Brinkmann, Thomas Mussenbrock - 40th IEEE International Conference on Plasma Science (ICOPS) & Pulsed Power and Plasma Science (PPPS), 17-21 June 2013, San Francisco (California), USA, Oral Contribution.

14- [Ion energy distribution functions at the inner surface of a PET bottle in a microwave driven low pressure plasma.](#)

Daniel Szeremley, Mohammed Shihab, Simon Steves, Peter Awakowicz, Ralf Peter Brinkmann, Mark J. Kushner, Thomas Mussenbrock - Microwave Workshop, 26 - 28 Nov. 2012, Bochum, Germany, oral contribution.

15- [Kinetic simulations of magnetically enhanced capacitively coupled radio frequency discharges.](#)

Jan Trieschmann, Mohammed Shihab, Sara Gallian, Daniel Szeremley, Denis Eremin, Ralf Peter Brinkmann, Thomas Mussenbrock - WELTPP-15, 22-23 Nov. 2012, Kerkrade, The Netherlands, Oral Contribution.

16- [Ion energy distribution functions at the inner surface of a PET bottle.](#)

Daniel Szeremley, Mohammed Shihab, Simon Steves, Peter Awakowicz, Ralf Peter Brinkmann, Mark J. Kushner, Thomas Mussenbrock - WELTPP-15, 22 - 23 Nov. 2012, Kerkrade, The Netherlands, oral contribution.

17- [Kinetic simulations of magnetized capacitively coupled discharges.](#)

Jan Trieschmann, Mohammed Shihab, Denis Eremin, Ralf Peter Brinkmann, Julian Schulze, Thomas Mussenbrock - 65th Annual Gaseous Electronics Conference (GEC), 22-26 Oct. 2012, Austin (Texas), USA, Poster.

18- [Online platform for simulations of ion energy distribution functions behind a plasma boundary sheath.](#)

Alexander Wollny, Mohammed Shihab, Ralf Peter Brinkmann - 65th Annual Gaseous Electronics Conference, 22-26 Oct. 2012, Austin, Texas, USA, Poster.

19- [Maßgeschneiderte Ionen-Energie Verteilungsfunktionen online berechnen für Jedermann.](#)

*Martin Predki, Mohammed Shihab, Alexander Wollny, Thomas Mussenbrock, Ralf Peter Brinkmann - DPG Frühjahrstagung, 12-16 March, Stuttgart, Germany, Poster.*

20- [Temporal investigation of ion dynamics in a radio-frequency sheath.](#)

Mohammed Shihab, Abd Elfattah Elgendy, Ralf Peter Brinkmann - WELT-PP-14, 1-2 Dec. 2011, Kerkrade, The Netherlands, Oral Contribution.

21- [Charge-voltage characteristic of non-harmonically modulated plasma boundary sheaths.](#)

Abd Elfattah Elgendy, Mohammed Shihab, Denis Eremin, Thomas Mussenbrock, Ralf Peter Brinkmann - WELTPP-14, 01-02 Dec. 2011, Kerkrade, The Netherlands, Oral Contribution.

22- [Self-consistent simulation of high-frequency driven plasma sheaths.](#)

Mohammed Shihab, Denis Eremin, Thomas Mussenbrock, Ralf Peter Brinkmann - 64rd Annual Gaseous Electronics Conference, 14-18 Nov. 2011, Salt Lake City, Utah, USA, Poster.

23- [Gridfähige Anbindung eines Randschichtmodells.](#)

Ralf Peter Brinkmann, Mohammed Shihab, Alexander Wollny, Torben Hemke, Shabnam Naggary, Wolfgang Ottow, Michael Klick - DPG Frühjahrstagung, 28-31 March 2011, Kiel, Germany, oral contribution.

24- [The dynamics of the RF sheath in capacitively coupled Plasmas](#)

Mohammed Shihab, Dennis Ziegler, Ralf Peter Brinkmann - DPG Frühjahrstagung, 28-31 March 2011, Kiel, Germany, Poster.

25- [Self-consistent model for capacitive coupled plasmas.](#)

Mohammed Shihab, Dennis Ziegler, Ralf Peter Brinkmann - PT 15, 28 Feb. - 2 March 2011, Stuttgart, Germany, Poster.

26- [Kinetic approach to the nonlinearity of RF modulated sheath.](#)

Mohammed Shihab, Dennis Ziegler, Thomas Mussenbrock, Ralf Peter Brinkmann - 63rd Annual Gaseous Electronics Conference, 04-08 Oct. 2010, Paris, France, Poster.

27- [The ion energy distribution in dual radio frequency collisionless CCPs.](#)

Mohammed Shihab, Thomas Mussenbrock, Ralf Peter Brinkmann - DPG Frühjahrstagung, 8-12 March 2010, Hannover, Germany, oral contribution.

28- [The ion energy distribution function in radio frequency capacitive plasma sheaths.](#)

Mohammed Shihab, Thomas Mussenbrock, Ralf Peter Brinkmann - WELTPP-12, 26-27 November 2009, Kerkrade, The Netherlands, Poster.

29- [Numerical study of the dynamics of Nickel plasma expansion after a laser pulse.](#)

G.H. Abou-Koura, N.M. EL-Siragy, M. Shihab, 1<sup>st</sup> Niles International Workshop with the 10<sup>th</sup> Easter Plasma Meeting, 16-18 March 2008, Cairo, Egypt, Poster

### WORKSHOPS, TRAINING, AND COURSES

1- Ultrafast x-ray summer school, Hamburg (XFEL & FLASH), 22-25 June 2015.

2- 1st Niles International Workshop on Lasers and Plasmas joined with the 10th Easter Plasma Meeting. 16-18 March 2008, Cairo, Egypt.

3- ISPC-19 School and 14th European Summer School Low Temperature Plasma Physics and Thermal Plasmas, 22-25 July 2009, Bad Honnef, Germany.

4- CFD-ACE+ plasma training, 28-29, 2010, Essen, Germany.

5- Numerical Plasma Simulation, a one-week course given by Prof. Dr. Jan van Dijk, the Plasimo team leader, Technische Universiteit Eindhoven. The course is given in Bochum, Germany.

6- Plasmatechnik in der Halbleiter und Mikrosystemtechnik, a one-week course given by Dr Michael Klick Plasmatrix, GmbH Berlin. The course is given in Bochum, Germany.

7- A regular participant in the Workshop on the Exploration of low temperature plasma physics, Kerkrade, the Netherlands, since 2009 up to 2013.

8- I attended the master courses given by Ralf Peter Brinkmann, Thomas Mussenbrock, and Dennis Eremin in Theoretical Electrical Engineering Institute. More details about these courses are present in <http://www.tet.rub.de/lehre/>.

### MEMBERSHIPS

- 1- Member of Ruhr-University Research School, 2011-2013.
- 2- Member of Physics today.

- 3- Member of the American Physical Society since 2012.
- 4- Member of the Deutsche Physikalische Gesellschaft e.V since 2012-2016.

### REVIEWER

- 1- IOP Publishing: Plasma Physics and Controlled Fusion
- 2- AIP Publishing: Physics of Plasmas

### CODES

- 1- Kinetic simulation of DC and RF sheaths. I wrote the code in two languages C++ and Mathematica. The model is named "Ensemble-in-Spacetime". The code is written under the supervision of Prof. Dr. Brinkmann.
- 2-Collisional-radiative model: I wrote a Fortran Code to solve the non-thermal expansion of Laser Produced Plasmas for the temporal variation of ion species population, electron temperature, ion temperature ...etc. The aim of the study was to explore the effect of ionization and recombination processes on the electron and ion heating during the plasma expansion.
- 3- Global model: I wrote a Fortran Code to describe the near-cathode region in thermal plasmas. The physics of the model is published by F. H. Scharf and R.P. Brinkmann, J. Phys. D: Appl. Phys. 39 (2006) 2738 and F. H. Scharf and R.P. Brinkmann, J. Phys. D: Appl. Phys. 41 (2008) 185206.
- 4- Kinetic simulation: Particle in cell simulation of capacitively coupled plasmas. T. Mussenbrock in Institute of Theoretical Electrical Engineering wrote the source code. I used the code and I have the ability to implement it to cover more physical perspectives. The code is written in C++.
- 5- Monte Carlo simulations as ion drift tube experiment and DSMC simulation, C++ code.
- 6- Many codes to demonstrate different physical and engineering problems based on several techniques as Lumped model circuits, Perturbation analysis, and the calculation of the dispersion relation of the plasma system.
- 7- Fluid simulation: I am familiar with CFD-ACE+ and Comsol, they are commercial softwares. However, there are different open

softwares which could be used safely in the field of research and teaching.

### TRAINING PRPGRAMS

I have attended different programs in the international center for faculty and leadership development, Tanta University:

- 1- Communication Skills, 21-23 Jan. 2014.
- 2- Time and Conference Management, 15-18 Jan 2014.
- 3- Effective Presentation, 28-30 Jan 2014.
- 4- University Administration, 11-13 Feb. 2014.
- 5- Strategic Planning, 4-6 Mar. 2014.
- 6- Credit Hour System, 18-20 Mar. 2014.
- 7- Preparing Competitive Research Projects, 10-12 Apr. 2018.
- 8- Research Team Management, 8-10 May 2018.
- 9- Conference Organization, 19-21 Jun. 2018.
- 10- Legal and Financial aspects in University Environment, 7-9 Jul. 2018.
- 11- Use of Technology in Teaching, 10-12 Jun. 2018.

### REFERENCES

- 1- Prof. Dr. Nabil El-Siragy, Tanta University, [nabilsiragy2015@gmail.com](mailto:nabilsiragy2015@gmail.com), 002 01223720458.



2- Prof. Dr. Samia Safaan, Head of Physics  
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3- Prof. Dr Abdelhameed Elshaer, Head of Physics  
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References available upon request.