Maïmouna BOCOUM | Curriculum Vitae

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French Driving Licence

Education

Ecole Polytechnique **Paris**
Doctorate *2012–2016*
Femtosecond lasers and plasma physics

Ecole Polytechnique- UPMC **Paris**
Master Degree *2012*
Nuclear Fusion Program

ENSTA Paristech **Paris**
Engineering degree *2009–2012*
Specialized in physics and mathematics

PhDThesis

Title: High-order harmonic and electron beams from plasma mirrors

Supervisors: Professor Lopez-Martens

Description: Experimental work on the generation of intense XUV radiation and electron beams from plasmas driven with intense femtosecond laser pulses. My work consisted in setting up the experiment, analyzing the data and working together with theoreticians on the interpretation of experimental results.

Research experience

Institut Langevin-CNRS **Paris**
Young-Researcher *2019-2020*
Laureate of young researcher CNRS recruitment campaign in 2018. Research area: development of Acousto-Optic (AO) imaging for *in-vivo* applications. Development of a digital holographic setup for the detection of tagged light.

Institut Langevin-INSERM **Paris**
Post-Doctorate *2017-2018*
Development of Acousto-Optic imaging prototype for medical imaging in the scope of MALT Plan Cancer project. Experimental work on photorefractive and hold-burning filtering. Theoretical work on acoustic beam forming.

Laboratoire d'Optique Appliquée **Palaiseau**
Post-Doctorate *2016-217*
Experimental working on high-order harmonic generation in continuity of PhD

Laboratoire d'Optique Appliquée **Palaiseau**
PhD *2012–2016*
Detailed achievements: Experimental PhD work on high-order harmonic generation from relativistic plasma mirrors: femtosecond pump-probe metrology, X-UV spectroscopy, fast electron detection and spectrometry, few cycle pulse metrology, kHz solid target metrology, design of a post-compression chamber, computer interface of experimental set-up, data analysis and analytical/numerical modeling.

Laboratoire d'Utilisation des Lasers Intenses **Palaiseau**
Master internship *2012*

Experimental part in a time-resolved pump-probe diffraction campaign to study the iron phase transition at high radiation pressures.

Polytechnique of Montreal **Quebec**

Summer internship *2010*

Experimental characterization of charge transport mechanism in melanin. Theoretical work on tetracene growth and polycrystalline properties.

Grants and awards

2012: PHD scolarship from ENSTA-Paritech

2014: Best junior presentation award at the "International Conference on Ultra Intense Lasers", Goa-India

Computer skills

Basic: C/C++, html , Linux

Intermediate: LaTeX, Solidworks

Advanced: Matlab, Labview

Teaching experience

2018 - 2020: Teacher assistant at ESPCI in optics (10 hours/year)

2012 - 2020: Teacher assistant at ENSTA ParisTech in Quantum mechanics for first year engineer students (24 hours / year)

2012 - 2016: Teacher assistant at ENSTA ParisTech in Non-linear optics for second year students (22 hours / year)

2008 – 2009: Mathematics examiner for preparatory classes at Michelet High School, Paris. Employer: French Education

Languages

French: Mothertongue

English: Fluent

List of publications

- J. Wünsche, G. Tarabella, S Bertolazz, **M.Bocoum** et al. "The correlation between gate dielectric, film growth, and charge transport in organic thin film transistors: the case of vacuum-sublimed tetracene thin films." **Journal of Materials Chemistry C** 1.5, pp967-976 (2013)
- W. Okell, T. Witting, D. Fabris, D. Austin, **M.Bocoum** and al. "Carrier-envelope phase stability of hollow fibers used for high-energy few-cycle pulse generation." **Optics letters** 38. pp3918-3021 (2013)
- A. Denoeud, N. Osaki, A.Benuzzi-Mounaix, H. Uranishi, Y. Kondo, R. Kodamac, E. Brambrink, A. Ravasio, **M. Bocoum** and al. "Dynamic X-ray diffraction observation of shocked solid iron up to 170 GPa" **PNAS** 113.28 pp7745-7749 (2016)
- **M. Bocoum** and al. "Practical spatial phase shift imaging interferometer for femtosecond characterization of plasma mirrors" **Optics letters** 40 pp3009-30012 (2015)
- B. Beaurepaire, A. Vernier, **M.Bocoum** and al. "Effect of the laser wave front in a laser-plasma accelerator." **Physical Review X** pp.031012. (2015)
- **M. Bocoum** and al.. "Anticorrelated emission of high-order harmonics and fast electron beams for relativistic plasma mirrors" **Physical Review Letters** 116.18" pp.185001 (2016)
- D. Guénot, D. Gustas, A. Vernier, B. Beaurepaire, F. Böhle, **M. Bocoum** and al. "Relativistic electron beams driven by kHz" **Nature Photonics** 11 pp293-296 (2017)
- ...**M.Bocoum** (30's author on 42), "The eli-alps facility : the next generation of attosecond sources," Journal of Physics B : Atomic, Molecular and Optical Physics vol.50 no.13 pp132002 (2017)

- **M. Bocoum** and al. "Two-color interpolation of absorption response for quantitative acousto-optic imaging," **Optics letters** 43(3), 399-402 (2017)
- C.Venet, **M. Bocoum** et al. "Ultrasound-modulated optical tomography in scattering media: flux filtering based on persistent spectral hole burning in the optical diagnosis window" **Optics letters** 43(16), 3993-3996 (2018)
- **M. Bocoum** and al. "Laser wakefield acceleration driven by few-cycle pulses on plasma mirrors" **Applied Optics** 58(8), 1933-1940 (2019)
- N.Zaim, F.Bohle,**M. Bocoum** and al. "Structured ultrasound-modulated optical tomography" **Physics of Plasma** 26(0), 033112 (2019)
- M.Ouillé, A.Vernier, F.Böhle, **M. Bocoum** and al. "Relativistic-intensity near-single-cycle light waveforms at kHz repetition rate" **Light: Science & Applications** 9(1), 1-9 (2020)