PhD candidate Michele Bianco

April 4, 2019

331 Queen's Park Junction, BN2 9XL Brighton, United Kingdom
Phone: +44 (0) 1273 877 418 E-mail: M.Bianco@sussex.ac.uk
Website: https://micbia.github.io/

I am a second-year PhD student, part of the Reionization group lead by Prof. Ilian T. Iliev, in the Astronomy Centre at the University of Sussex. I am very keen on solving problems with a scientific approach and I have a particular interest in numerical simulation and statistical analysis. My best traits are versatility, punctuality and rigour. I am also a teamwork enthusiast, able to communicate and cooperate with others to reach a common goal. During my PhD, I have worked under pressure and made decisions in stressful environments to respect deadlines and set objectives, producing work of scientific importance.

Education

- **PhD in Astrophysics** at Astronomy Centre, University of Sussex, United Kingdom [2017 - to date]
  PhD focused on numerical aspect of the Epoch of Reionization, this involve the use of radiative transfer and N-body simulation. At the moment I am implementing the sub-grid inhomogeneity of large box (500 Mpc/h, sample size of $\mathcal{O} \sim 10^6$) inferring sub-grid distribution from smaller, high resolute simulation (5 Mpc/h, sample size $\mathcal{O} \sim 10^9$), for the C2-Ray code.
- **MSc in Astrophysics** at Ludwig-Maximillians-University LMU Munich, Germany [2015 - 2017]
  Research master's degree on the effect of large scale structure correlation on the halos cluster count. With the help of semi-analytical N-body simulation I studied the the statistical error of clusters number counts due the finite size of the measured Fourier mode of the power spectrum.
- **BSc in Physics & Mathematics** at University of Fribourg UNIFR, Switzerland [2011 - 2014]
  Combined degree with major in Physics (150 ECTS) and minor in Mathematics (30 ECTS). Varying topics were discussed, from atomic physics to spectroscopy and an introduction to N-body problem, alongside with advance differential analysis, linear algebra and statistical methods with following practical laboratory for a total of 12 month long experiment.

Scholarship & Grants

- Member of the Royal Astronomical Society RAS since 8 Feb. 2018
- STFC astronomy research grants (3.5 years) from 27 Sep. 2017 until 21 Mar. 2021

Skills

I have acquired a number of essential skills that support my current research:

- **High Performaces Computers:**
  I am working with a series of Supercomputers, part of the PRACE Consortium.
  - JURECA, Jülich Research on Exascale Cluster Architectures JSC [started Jan. 2019]
  - JUWELS, Jülich Wizard for European Leadership Science JSC [started Jan. 2019]
  - Piz Daint, Swiss National Supercomputer Centre CSCS [ended Feb. 2018]
  - MareNostrum IV (2017), Barcellona Supercomputing Centre BSC [ended Feb. 2018]
  - APOLLO Cluster, permanent account at the University of Sussex [started Set. 2017]
- **Coding languages:**
  Python (NumPy, Pandas, SciKit, TensorFlow, Keras), C/C++, Fortran, HTML/CSS, Java, Batch Script
- **Astronomical and Scientific tools:**
  DS9, TopCat, Aladin Sky Atlas
  LaTex, R, Matlab, Wolfram Mathematica, Maple (2017)

- **Languages**:
  - Italian: Native Language
  - English: IELTS (6.5/9, B2), test date: June 27, 2015
  - French: Advanced level (school, academic year at UNIFR)
  - German: Advanced level (school, academic years at LMU and UNIFR)
  - Slovenian: understanding and use of common words (personal interest)
  - Mandarin: recognise and understanding of basic kanji (personal interest)

Publications & Collaborations

- *Impact of inhomogeneous subgrid clumping on cosmic reionization*, `arXiv`: under publication
  Yi Mao, J. Koda, P. R. Shapiro, I. T. Iliev, G. Mellema, H. Park, K. Ahn and M. Bianco
- *Model Sub-grid density inhomogeneity of large simulation for EoR*, `arXiv`: under publication
  Michele Bianco, I. T. Iliev

Employment

- University of Sussex:
  - Assistant tutor, *Introduction to Astrophysics* [Winter Semester 2018]
    Led problem-solving workshop and marked the undergraduate year
  - Assistant tutor, *Mathematical Methods for Physics* [Winter Semester 2018]
    Led problem-solving workshop and marked the undergraduate year
- Swiss Army:
  - On duty as soldier, Fusilier Battalion 30/3, Recruit Company 11-3/1 [2014-2015]
    Fulfilment of the required military service
- University of Fribourg:
  - Assistant tutor, *Physics I & II* exercises [2013-2014]
    Led problem-solving workshop for bio-physics undergraduate year
  - Assistant tutor, *Practical Laboratory* for first year [2013-2014]
    Led practical experiment workshop for bio-physicist undergraduate year
  - Physic Students Council Cashier

Conferences & Workshops

- *PRACE Winter School 2019*, Introduction to Machine Learning for Scientists, Belgium, 2019
- *Parallel and GPU Programming in Python*, PRACE training held by SURFsara, the Netherlands, 2018
- *GPU Programming with CUDA*, PRACE training held by EPCC at Imperial College London, UK, 2018
- *South Coast Cosmology*, gave a talk, UK, 2018
- *RAMSES User Meeting 2018*, organized by the Centre de Recherche Astrophysique Lyon, France, 2018
- *LOFAR-EoR Plenary Meeting 2018*, Groningen, Netherlander, 2018
- *MPI, OpenMP and Advanced Topics in Parallel Programming*, held by HLRS Stuttgart, Germany, 2017

References

- Professor Ilian T. Iliev,
PhD supervisor, University of Sussex
I.T.Iliev@sussex.ac.uk

- Professor Philipp Aebi
President physic department (2014), University of Fribourg
philipp.aebi@unifr.ch

- Professor Jochen Weller
Master thesis supervisor, University Observatory Munich
jochen.weller@usm.lmu.de