University Academic Curriculum Vitae

Personal information

Name Laura Di Lucchio

Education since leaving school

- year and title of first degree : 2005 Bachelor's Degree in Physics with grade 110/110, University of Bologna
- year and title of post-graduate degrees (and university): 2008 Master's Degree in Theoretical Physics, final grade 110/110 cum laude, University of Bologna.
- year, subject area and title of PhD (and university): 2012 PhD in Physics University of Bologna and University of Castilla La Mancha, Spain.

Present appointment

Professional experience

From / to	Job title	Name of academic Institution	Academic level	responsibilities
From 01/09/2012 to 15/06/2015	Postdoctoral contract	Forschungszentrum Jülich (FZJ), Germany	postdoctoral contract	Theoretical and numerical support for the experimental laser labs based at Helmholtz Jena Institute, at GSI facility (Darmstadt),at LMU University (Munich), at Max Planck Institute (Garching), at Peter Gruenberg Institute in FZJ .
From 15/06/2015 to 15/06/2017	Research fellowship	DESY, Hamburg, Germany	research fellow	Supporting theoretical and numerical research has been developed in the context of FLASHForward project at DESY, separately and/or for the purpose of building an acceleration beamline

Publications

- L.Di Lucchio, P.Gibbon, "**Post-acceleration of electron bunches from laser-irradiated nanoclusters**", *Physica Scripta* 96.5 (2021): 055603.
- I. Engin, Z.M. Chitgar, O. Deppert, L.Di Lucchio et al., "**Laser-induced acceleration of Helium Ions for a spin-polarized Ion Source**",Plasma Physics and controlled fusion, September 2019.
- D.E. Cardenas, T.M. Ostermayr, L. Di Lucchio et al. "**Sub-cycle dynamics in relativistic nanoplasma acceleration**", Scientific Reports, 9(1):7321, 2019.
- L.Veisz, D.E. Cardenas, T.M. Ostermayr, L. Di Lucchio et al., "**Few-cycle-laser-driven electron acceleration**", Abstract Book ECLIM 2018-page 27, ECLIM 2018, 22-26 October 2018, Crete, Greece

	● L. Veisz ,D.E. Cardenas, L. Di Lucchio et al., "**Sub-5-fs laser-driven nanophotonics in the relativistic intensity regime**", proceeding of HILAS 2018, January 2018, Strasbourg, France ● P.Niknejadi, J. H. Röckemann, F. Marutzky, L. Schaper, J.-P. Schwinkendorf, L. Di Lucchio et al., "**Plasma Wakefield Accelerated Beams for Demonstration of FEL gain at FLASHForward**", 38th International Free Electron Laser ConferenceAt: Santa Fe, NM, USA ● R.D'Arcy, A. Aschikin, C. Behrens, S. Bohlen, J. Dale, N. Delbos, L. Di Lucchioa et al. ,"**FLASHForward: Future-Oriented Wakefield Accelerator Research Development at FLASH**", Proceedings of IPAC 2017, Copenhagen, Denmark ● Aschikhin, A.* ; Di Lucchio, L. (Corresponding author)* ; Hu, Z.* ; Kononenko, O.* ; Libov, V.* ; Martinez de la Ossa, A. ; Mehrling, T.* ; Osterhoff, J.* ; Palmer, C.* ; Schaper, L.* ; Streeter, M.***Simulation studies of injection techniques for Flashforward laser wakefield test beam line**, The 5th annual meeting of the LAOLA collaboration, Wismar, Germany, 21 Jun 2016 - 22 Jun 2016 ● Engin, I. and Büscher, M. and Deppert, O. and Di Lucchio, L. et al. " **Towards a Laser driven polarized 3He Ion Beam Source** ", PSTP, May 2016 ● A. Aschikhin[a], C. Behrens[a], S. Bohlen[a], J. Dale[a], N. Delbos[b], L. Di Lucchio[a] et al. ,"**The FLASHForward facility at DESY**", NIMA 806 (2016) ● Engin, I. and Büscher, M. and Deppert, O. and Di Lucchio, L. et al. " **Towards a Laser-driven polarized 3He Ion Beam Source** ", PSTP, May 2016 ● A. Aschikhin, C. Behrens, S. Bohlen, J. Dale, N. Delbos, L. Di Lucchio et al.,"**The FLASHForward facility at DESY**", NIMA 806 (2016) ● I. Engin, M. Büscher, O. Deppert, L. Di Lucchio et al., "**Towards a laser-driven polarized 3 He Ion-Beam Source**" POS (PSTP2015)002" ● L.Di Lucchio, A. A. Andreev, P. Gibbon, "**Ion acceleration by intense, few-cycle laser-pulses with nanodroplets"**, Phys. Of Plasmas 22 , 053114 (2015) ● L. Di Lucchio, P.Gibbon, "**Relativistic attosecond electron bunches emission from few-cycles laser-irradiated nanoscale droplets**", PRSTAB 18, 023402 (2015) ● A. R. Piriz, L. Di Lucchio, G. Rodriguez Prieto, N. A. Tahir, "**Dynamic Stabilization of Rayleigh-Taylor instability in ablation fronts**", EPJ Web of Conferences 59, 04007 (2013) ● A.R.Piriz, L.Di Lucchio, G. Rodriguez Prieto, N.A.Tahir, "**Vibration waveform effects on dynamic stabilization of ablative Rayleigh-Taylor instability**", Phys. Plasmas 18, 082705(2011) ● A.R.Piriz, L. Di Lucchio, G.Rodriguez Prieto, "**Dynamic stabilization of Rayleigh-Taylor instability in an ablation front**", Physics of Plasmas 18, 012702 (2011), also presentation at "EPS 2011: 38th conference on plasma physics" , Strasbourg (France), June 27th - July 1st , 2011 ● A.Sgattoni, C. Benedetti, P.Londrillo, L. Di Lucchio, G. Turchetti, "**Comparison of scaling laws with PIC simulations for proton acceleration with long wavelength pulses**", Nuclear Instruments and Methods in Physics Research section A,Volume 620, Issue 1, 1 August 2010, pages 51-55, presented at the workshop "Coulomb '09", Senigallia (Italy), 15th -18th June 2009
Statement of interest	Dear Sirs and Madams, During my research work that I performed after my degree in Physics I had several occasions of dealing with numerical and analytical analysis of matter in extreme conditions. I have studied plasmas generated in the context of inertial confinement fusion, where a very strong laser radiation hits a solid hydrogen pellet. I have performed a mathematical study of the interface where the matter undergoes ablation-namely it becomes a plasma - under the aspect of the hydrodynamic instabilities, in particular Rayleigh-Taylor instability . I have made use of mathematical software for solving the relevant differential equations in the context of fluid analysis. During my PhD I also started working with PIC (particle in cell codes), which make use of a mesh or a grid and they solve numerically the electromagnetic equations for interaction of very intense light with solid matter. I performed two postdocs in Germany, the first one at Forschungszentrum Juelich and the second one at DESY, Hamburg. I have studied by means of extensive simulations how ultra intense lasers can cause several physical effects in matter, depending on the nature and size of the obstacle - highly nonlinear optics in several cases. The targets were either dense gases, such as He, or solid capsules, represented by means of frozen hydrogen so that they could be analyzed under a

	computational point of view. I have made use of highly parallelized codes which could run on thousands of processors and I have written code for the graphics. Finally, a mathematical model was formulated for the propagation of the attosecond electron bunches produced by a nanometer-sized droplet irradiated by a relativistic laser. I know several programming languages, including fortran, C, Python and more recently I have been taking additional courses in artificial intelligence for the purpose of further examining data from long simulation runs for the plasma. I believe that a position in the context of your organization would bring me the possibility of helping with my numerical and analytical skills already tested in high energy density matter. Sincerely Laura Di Lucchio
Language competence	Fluent spoken and written English (C1), fluent spoken and written Spanish (C1), B2 certificate of German language knowledge.

Date Signature