

MANCELLI Donaldi, Ph.D. in Plasma Physics

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Employment History

- Jul.2013 – Present  **Assistant:** Erasmus Student Assistant, at HMU, Chania, Crete, Voluntarily
- Apr.2013 – Sep.2013  **Internship:** Internship At The NOC Office Of Department Of Electronic Engineering, at HMU, Chania, Crete
- Oct.2013 – Feb.2014  **Assistant:** Laboratory Assistant at the of Optoelectronics and Optical Communication, at HMU, Chania, Crete
- Feb.2014 – Jun.2014  **Assistant:** Laboratory Assistant Electronics III, at HMU, Chania, Crete
 **Assistant:** Laboratory Assistant Electrical Circuit II, HMU, Chania, Crete
- Feb.2016 – Oct.2016  **M.Sc. Internship:** Internship at University of Bordeaux – CELIA
- Feb.2017 – Dec.2021  **PhD Student:** PhD at University of Bordeaux - CELIA
- Feb.2017 – Jun.2021  **PhD Student:** PhD University of the Basque Country – DIPC
- Oct.2022 – present  **Post-Doctoral Research Scientist:** Hellenic Mediterranean University – IPPL

Education

- 2008 – 2014  **B.Sc., Electronic Engineering**, Hellenic Mediterranean University, Greece
- 2014 – 2016  **M.Sc. Plasma Physics & Applications**, Hellenic Mediterranean University, Greece
Institute for Plasma Physics & Laser, Rethymno, Greece
Thesis title: *Development and study of diagnostics for laser-produced plasma's.*
- 2017 – 2021  **Ph.D. Cotutelle - University of Bordeaux, France & University of the Basque Country, Spain**, Plasma Physics & Lasers
Thesis title: *Generation of laser-driven shocks and their use to study simple compounds at high pressures.*

Research Publications

Journal Articles

- 1 Barbato, F., Atzeni, S., Batani, D., Bleiner, D., Boutoux, G., Brabetz, C., Mancelli, D., Neumayer, P., Trela, J., Volpe, L., et al. (n.d.). Experimental in-line phase-contrast imaging (pci) of a shock wave.
- 2 Filippov, E. D., Khan, M., Tentori, A., Gajdos, P., Martynenko, A. S., Dudzak, R., Koester, P., Zeraouli, G., **Mancelli, D.**, Baffigi, F., Gizzi, L. A., Pikuz, S. A., Nicolai, P., Woolsey, N. C., Fedosejevs, R., Krus, M., Juha, L., Batani, D., Renner, O., & Cristoforetti, G. (2023). Characterization of hot electrons generated by laser-plasma interaction at shock ignition intensities. *Matter and Radiation at Extremes*, 8(6), 065602.
<https://doi.org/10.1063/5.0157168>

- 3 Cristoforetti, G., Baffigi, F., Batani, D., Dudzak, R., Fedosejevs, R., Filippov, E. D., Gajdos, P., Juha, L., Khan, M., Koester, P., Krus, M., **Mancelli, D.**, Martynenko, A. S., Nicolai, P., Pikuz, S. A., Renner, O., Tentori, A., Volpe, L., Woolsey, N., ... Gizzi, L. A. (2023). Investigation on the origin of hot electrons in laser plasma interaction at shock ignition intensities.
<https://doi.org/10.21203/rs.3.rs-3034760/v1>
- 4 Cristoforetti, G., Koester, P., Atzeni, S., Batani, D., Fujioka, S., Hironaka, Y., Hüller, S., Idesaka, T., Katagiri, K., Kawasaki, K., Kodama, R., **Mancelli, D.**, Nicolai, P., Ozaki, N., Schiavi, A., Shigemori, K., Takizawa, R., Tamagawa, T., Tanaka, D., ... Gizzi, L. A. (2023). Multibeam laser-plasma interaction at the Gekko XII laser facility in conditions relevant for direct-drive inertial confinement fusion [Edition: 2023/02/20 Publisher: Cambridge University Press]. *High Power Laser Science and Engineering*, 11, e24.
<https://doi.org/10.1017/hpl.2023.13>
- 5 **Mancelli, D.**, Errea, I., Tentori, A., Turianska, O., Larreur, H., Katagiri, K., Ozaki, N., Kamimura, N., Kamibayashi, D., Ishida, K., Ogura, H., Kawasaki, K., Maeda, Y., Hironaka, Y., Shigemori, K., Batani, K., Schaumann, G., Rosmej, O., Neumayer, P., ... Batani, D. (2021). Shock hugoniot data for water up to 5 mbar obtained with quartz standard at high-energy laser facilities (J. M. Perlado, Ed.) [Publisher: Hindawi]. *Laser and Particle Beams*, 2021, 4141522. <https://doi.org/10.1155/2021/4141522>
- 6 Cristoforetti, G., Hüller, S., Koester, P., Antonelli, L., Atzeni, S., Baffigi, F., Batani, D., Baird, C., Booth, N., Galimberti, M., Glize, K., Héron, A., Khan, M., Loiseau, P., **Mancelli, D.**, Notley, M., Oliveira, P., Renner, O., Smid, M., ... Gizzi, L. A. (2021). Observation and modelling of stimulated Raman scattering driven by an optically smoothed laser beam in experimental conditions relevant for shock ignition [Edition: 2021/10/18 Publisher: Cambridge University Press]. *High Power Laser Science and Engineering*, 9, e60. <https://doi.org/10.1017/hpl.2021.48>
- 7 Jakubowska, K., **Mancelli, D.**, Benocci, R., Trela, J., Errea, I., Martynenko, A. S., Neumayer, P., Rosmej, O., Borm, B., Molineri, A., Verona, C., Cannatà, D., Alivierdiev, A., Roman, H. E., & Batani, D. (2021). Reflecting laser-driven shocks in diamond in the megabar pressure range [Edition: 2021/01/08 Publisher: Cambridge University Press]. *High Power Laser Science and Engineering*, 9, e3.
<https://doi.org/10.1017/hpl.2020.38>
- 8 Filippov, E., Martynenko, A., Cervenak, M., Antonelli, L., Baffigi, F., Cristoforetti, G., Gizzi, L., Pisarczyk, T., **Mancelli, D.**, Ospina, V., Krus, M., Dudzak, R., Pikuz, S., Batani, D., & Renner, O. (2020). X-ray time-resolved diagnostics of hot electron generation in shock ignition relevant experiments. *2020 International Conference Laser Optics (ICLO)*, 1–1.
<https://doi.org/10.1109/ICLO48556.2020.9285718>
- 9 Barbato, F., Atzeni, S., Batani, D., Bleiner, D., Boutoux, G., Brabetz, C., Bradford, P., **Mancelli, D.**, Neumayer, P., Schiavi, A., Trela, J., Volpe, L., Zeraouli, G., Woolsey, N., & Antonelli, L. (2019). Quantitative phase contrast imaging of a shock-wave with a laser-plasma based X-ray source. *Scientific Reports*, 9(1), 18805. <https://doi.org/10.1038/s41598-019-55074-1>
- 10 Antonelli, L., Trela, J., Barbato, F., Boutoux, G., Nicolai, P., Batani, D., Tikhonchuk, V., **Mancelli, D.**, Tentori, A., Atzeni, S., Schiavi, A., Baffigi, F., Cristoforetti, G., Viciani, S., Gizzi, L. A., Smid, M., Renner, O., Dostal, J., Dudzak, R., ... Krus, M. (2019). Laser-driven strong shocks with infrared lasers at intensity of 10^{16} W/cm². *Physics of Plasmas*, 26(11), 112708. <https://doi.org/10.1063/1.5119697>
- 11 Batani, D., Santos, J., Forestier-Colleoni, P., **Mancelli, D.**, Ehret, M., Trela, J., Morace, A., Jakubowska, K., Antonelli, L., del Sorbo, D., Manclossi, M., & Veltcheva, M. (2019). Optical Time-Resolved Diagnostics of Laser-Produced Plasmas. *Journal of Fusion Energy*, 38(3), 299–314.
<https://doi.org/10.1007/s10894-019-00218-4>
- 12 Antonelli, L., Barbato, F., **D. Mancelli**, Trela, J., Zeraouli, G., Boutoux, G., Neumayer, P., Atzeni, S., Schiavi, A., Volpe, L., Bagnoud, V., Brabetz, C., Zielbauer, B., Bradford, P., Woolsey, N., Borm, B., & Batani, D. (2019). X-ray phase-contrast imaging for laser-induced shock waves. *Europhysics Letters*, 125(3), 35002. <https://doi.org/10.1209/0295-5075/125/35002>

- 13 Barbato, F., Batani, D., **D. Mancelli**, Trela, J., Zeraouli, G., Boutoux, G., Neumayer, P., Atzeni, S., Schiavi, A., Volpe, L., Bagnoud, V., Brabetz, C., Zielbauer, B., Bradford, P., Woolsey, N., Borm, B., & Antonelli, L. (2019). Propagation-based imaging phase-contrast enhanced imaging setup for single shot acquisition using laser-generated x-ray sources. *Journal of Instrumentation*, 14(03), C03005. <https://doi.org/10.1088/1748-0221/14/03/C03005>
- 14 Cristoforetti, G., Antonelli, L., **Mancelli, D.**, Atzeni, S., Baffigi, F., Barbato, F., Batani, D., Boutoux, G., D'Amato, F., Dostal, J., Dudzak, R., Filippov, E., Gu, Y. J., Juha, L., Klimo, O., Krus, M., Malko, S., Martynenko, A. S., Nicolai, P., ... Gizzi, L. A. (2019). Time evolution of stimulated Raman scattering and two-plasmon decay at laser intensities relevant for shock ignition in a hot plasma [Edition: 2019/08/15 Publisher: Cambridge University Press]. *High Power Laser Science and Engineering*, 7, e51. <https://doi.org/10.1017/hpl.2019.37>
- 15 Batani, D., Antonelli, L., Barbato, F., Boutoux, G., Colaïtis, A., Feugeas, J.-L., Folpini, G., **D. Mancelli**, Nicolai, P., Santos, J., Trela, J., Tikhonchuk, V., Badziak, J., Chodukowski, T., Jakubowska, K., Kalinowska, Z., Pisarczyk, T., Rosinski, M., Sawicka, M., ... Ullschmied, J. (2018). Progress in understanding the role of hot electrons for the shock ignition approach to inertial confinement fusion. *Nuclear Fusion*, 59(3), 032012. <https://doi.org/10.1088/1741-4326/aaf0ed>
- 16 Cristoforetti, G., Antonelli, L., Atzeni, S., Baffigi, F., Barbato, F., Batani, D., Boutoux, G., Colaitis, A., Dostal, J., Dudzak, R., Juha, L., Koester, P., Marocchino, A., **Mancelli, D.**, Nicolai, P., Renner, O., Santos, J. J., Schiavi, A., Skoric, M. M., ... Gizzi, L. A. (2018). Measurements of parametric instabilities at laser intensities relevant to strong shock generation. *Physics of Plasmas*, 25(1), 012702. <https://doi.org/10.1063/1.5006021>
- 17 Pisarczyk, T., Gus'kov, S., Dudzak, R., Renner, O., Batani, D., Chodukowski, T., Rusiniak, Z., Dostal, J., Demchenko, N., Rosinski, M., Parys, P., Smid, M., Korneev, P., Krousky, E., Borodziuk, S., Badziak, J., Antonelli, L., Gizzi, L., Cristoforetti, G., ... Pisarczyk, P. (2018). Wavelength dependence of laser plasma interaction related to shock ignition approach [Edition: 2018/11/16 Publisher: Cambridge University Press]. *Laser and Particle Beams*, 36(3), 405–426. <https://doi.org/10.1017/S0263034618000447>

Skills

Languages	<ul style="list-style-type: none"> 📖 Greek, English, Albanian, French (basics), Spanish (basic).
Coding	<ul style="list-style-type: none"> 📖 Python, Matlab, C, \LaTeX, FORTRAN (F77 & F90), bash
Codes	<ul style="list-style-type: none"> 📖 Flash (MHD), Multi 1D, MULTI 2D, Quantum Espresso, CALYPSO
Software	<ul style="list-style-type: none"> 📖 Mathematica, Linux, MAC-OS, Microsoft Office.
Lab	<ul style="list-style-type: none"> 📖 Laser matter interaction: of high intensity fs pulses with solid and gas targets. Laser driven shock Waves: high energy for Equation of State studies. Optical probing techniques: Experience in setting up laser pump-probe diagnostics for plasma characterization by shadowgraphy, interferometry, VISAR, SOP, planar geometry, multi-layer targets, Impedance Mismatch. Matter in Extreme Conditions: Diamond, LiH, Water, Quartz, proton-Boron, Ti. X-Ray techniques: XPCI, X-ray radiography, Spectroscopy Parametric Instabilities relevant for Shock Ignition (SI): SRS, TPD, broadband laser, planar geometry, multi-layer targets, exploding foils.

Conducted Experimental Campaigns

International Collaborative Experimental Work

- 2016 **01/02/2016 – 30/09/2016**, Data analysis of the GSI campaign on Diamond study: (Study the behaviour of diamond compressed to Mbar pressures by laser-driven shocks using a VISAR diagnostics)
- 2017 **27/02/17 - 24/03/17**, Understanding the effects of hot electron preheating on shock break-out times and pressure measurements: at the Prague Asterix Laser System (PALS)
- 28/05/2017 - 24/06/17**, "X-ray phase contrast imaging of laser-produced shock wave propagating in low-density material" proof of principle experiment conducted on PHELIX facility in Darmstadt in Germany
- 2018 **2/04/18 - 21/04/18**, Experimental platform to characterize temperature and density of a Titanium wire isochoric heated by laser-accelerated electrons - test of a novel approach to study EOS in the WDM regime, (P-166) experiment conducted on PHELIX laser facility in Darmstadt in Germany
- 16/09/18 - 29/09/18**, Understanding the effects of hot electron preheating on shock break-out times and pressure measurements at the Prague Asterix Laser System (PALS)
- 29/10/18 - 23/11/18**, Generation of transient very strong shocks by fs-Lasers, at VEGA II CLPU, Salamanca Spain
- 5/11/18 - 11/12/18**, Role of Laser Plasma Interactions in the Shock Ignition Regime (18110033)" VULCAN TAW laser facility, RAL-CLF, Didcot United Kingdom
- 2019 **02/09/2019 – 06/09/2019**, Behavior and optical properties of materials of planetological interest (water and LiH) at Megabar pressures, at GEKKO XII laser facility, Osaka, Japan
- 08/09/2019 – 13/09/2019**, Investigation of Laser-Plasma interaction and the hot electron generation in Shock ignition regime, at GEKKO XII laser facility, Osaka, Japan
- 16/09/2019 – 20/09/2019**, Numerical investigation on non-thermal electron effects measured in a Gekko experiment at intensities relevant to shock ignition, GEKKO XII laser facility, Osaka, Japan
- 2020 **02/02/2020 – 27/02/2020**, PALS proposal for L4n preliminary experiment, at PALS laser facility, Prague
- 08/04/2020 – 03/04/2020** Investigation of Laser-Plasma interaction and the hot electron generation in Shock ignition regime, at PALS laser facility, Prague
- 2021 **30/11/2021 – 18/12/2021**, Study of matter at extreme conditions, at GSI-PHELIX laser facility, Germany

Conducted Experimental Campaigns (continued)

- 2021 ■ **06/07/2021– 16/07/2021**, Study of Water and Diamond samples at extreme conditions at GEKKO XII laser facility, at ILE-GEKKO XII laser facility, Japan
- 2022 ■ **12/09/2022 - 14/10/2022**, Impact of laser bandwidth on LPI in conditions relevant for Shock Ignition, at VULCAN TAW laser facility, RAL-CLF Didcot United Kingdom
- 2023 ■ **11/09/2023 - 13/10/2023**, Characterization of side-stimulated Raman Scattering and light scattered outside the laser focusing cone at Shock Ignition intensities, at PALS laser facility, Prague

Conferences

Orals and Posters

- 2017 ■ **2nd European Conference on Plasma Diagnostics (ECPD)**, 18-21 April 2017 Bordeaux (France)
 - **8th Summer School: Atoms and Plasmas in Super-Intense Laser Fields**, held at Erice, Sicily, Italy on July 7-17 (2017)
 - **IFSA17**, 10th International Fusion Science and Application Conference (September 11-15, 2017 in St-Malo)
- 2018 ■ **PowerLaPs**, Innovative Education & Training in High Power Laser Plasmas, Erasmus + (July 2-13, 2018 Rethimo Crete, Greece)
 - **EHPRG18**, 56th European High-Pressure Research Group Meeting Aveiro - Portugal, 2 - 7 September 2018
- 2019 ■ **DDFIW**, 15th Direct-Drive and Fast-Ignition Workshop, Rome, Italy 8-20 April 2019
 - **ECPD**, 3rd European Conference on Plasma Diagnostics (ECPD) Lisbon, Portugal 6-9 May 2019 (Chairman session and Poster Presentation)
 - **PowerLaPs**, Innovative Education & Training in High Power Laser Plasmas Erasmus + (July 1-13, 2019 Rethimo Crete, Greece)
 - **IFSA19**, 11th International Fusion Science and Application Conference (September 22-27, 2019 in Osaka, Japan, Poster Presentation)
- 2021 ■ **HIRSCHEGG**, 41st International Workshop on High Energy Density Physics with Intense Ion and Laser Beams 01-05 February 2021 Online (ORAL Talk)
 - **ECPD** 4th European Conference on Plasma Diagnostics 2021, 7th - 11th June 2021 Online (two Poster Presentations)
 - **EPS**, 47th Conference on Plasma Physics - Satellite Meeting 28th - 29th June 2021, Online (Poster Presentation)
- 2023 ■ **ECPD**, 5th European Conference on Plasma Diagnostics 2023, Rethymno, Greece, April 24-28 (Poster presentation), Best Price