# ROADMAP ON ATOMIC, MOLECULAR AND OPTICAL RESEARCH AT THE ARGENTINE ATOMIC ENERGY COMMISSION

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The research in Atomic, Molecular and Optical (AMO) Physics at the National Atomic Energy Commission (CNEA) of Argentina has a long and continuous tradition, dating back to 1960, when the first laboratory in Argentina dedicated to AMO Physics was created in 1960 by Prof. Wolfgang Meckbach at the Bariloche Atomic Centre (CAB).

In a previous communication [1], the thematic scope and related experimental facilities, both in CNEA and in other laboratories in Argentina, have already been described.

In this Roadmap, we will focus on how these activities are inserted within the framework of the various applications and technological challenges of CNEA. We will look back along the road, showing the evolution of AMO research in CNEA, overviewing the present status of the field, and addressing current and future challenges faced by those working in this broad and exciting area of research. The "Laboratory of Isotopic Separation" (LASIE), the "Centre for Proton Therapy" (CEARP) and the "Centre for Nuclear Medicine and Radiotherapy" (INTECNUS) are actual examples of CNEA projects that act as driving forces for AMO physics.

A myriad of stimulating research lines in Medical Physics, Heavy Ion Accelerators and Spectroscopy Techniques, to name just a few, add value and interest to the investigations carried out, for instance, in our 1.7 MeV tandem accelerator, with PIXE, RBS, ERDA and channelling capabilities, and a chamber for Cold Target Recoil Ion Momentum Spectroscopy (COLTRIMS), the Mass Spectroscopy facility (AMS), the two electrostatic accelerators of 100 and 300 keV, the time-of-flight system for ISS spectroscopy, the surface analysis equipment for XPS, UPS, AES and SIMS spectroscopy, and the STM and AFM microscopes.

Finally, we will also describe the advances in the creation of the "Argentinean Network for Nuclear, Atomic, Molecular and Optical Data and Codes", or DINAMO (for to its acronym in Spanish) and the participation of Argentina in the Data Bank of the Nuclear Energy Agency (NEA-OECD), and -in particular- in the Joint Evaluated Fission and Fusion (JEFF) collaboration, as well as in other international committees as BIMP and ICRM.

[1] R. O. Barrachina: "Atomic, Molecular and Optical Research in Argentina", 1st Meeting of the Experimentalists Network, IAEA Headquarters (Vienna, Austria, November 2018).

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- Head of the Department of Interaction of Radiation with Matter, CNEA (2011 – 2015).
- Member of the National Director Committee for the Teaching of Radiological Protection, CoDiNEPRa.
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