III Mexican Workshop on Accelerator Physics

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Book of Abstracts

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Ideas for future synchrotron light source in Mexico

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In this talk a brief overview on light sources around the world is given, the status of the Mexican users of such facilities and of the accelerators physics in Mexico is also discussed. Then, some ideas for the storage ring of the Mexican Synchrotron Light Source (MSLS) are presented, which include third generation machines with DBA and MBA cells. Given current trends and in order to have a competitive facility when the MSLS begins operations, in approximately 10 years, the possibility of a Diffraction-Limited Storage Ring (DLSR) must also be considered. Our toy models are based on the linear lattice design, however a simpler non-linear lattice optimization is applied in order to that the dynamic aperture not be very bad.

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Overview and latest news from ALBA

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Overview and latest news from ALBA
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Keywords: facility, construction, installation, operation, beamlines
ALBA [1] is a third generation synchrotron light source, recently come into operation, located in Spain. A historical perspective of the main key aspects of the project is presented in this work, with the aim of giving an overview of the project, including its present status and prospects. Installing a new facility of this type in Spain was an unprecedented challenge, which may well serve as a reference [2].
Starting with a chronological review of the different phases of the project, the talk will pay special attention to some relevant decisions taken during the complex installation process. Some emphasis is made on the key decision of setting forward the project of a collaborative beamline at the European Synchrotron Radiation Facility (ESRF), at a very early stage of the project: this choice allowed for obtaining very relevant management experience, training Spanish instrumentalists, and fostering the growth of the Spanish user community. A motivation as to why a project like ALBA is justified will be argued, with a specific statement on the synergies to be created with science-driven industry.
The civil works construction is an extremely relevant aspect, since buildings and conventional installations should be taken as an integral part of the scientific instrument. Therefore the main requirements and constraints will briefly be addressed and the construction sequence revised.
The main aspects of the accelerator complex [3] will be described very briefly, since a separate talk specific to it is presented elsewhere in this workshop. Some examples of key choices made in the installation process are nevertheless dealt with.
Beamlines are to be covered in further detail: ALBA has at the moment seven beamlines in operation (phase 1), plus two in construction (the so-called phase 2). Furthermore, a phase 3 set of beamlines is being refined with the aim of securing funding for the expansion of the lab from 2015 onwards. The beamlines to be presented span from infrared to hard X-rays and deal with areas such as: bioscience, materials science, condensed matter physics, nanoscience and chemistry among others.

ALBA phase 1 beamlines came into operation gradually during year 2012. The first experiment with official users (that is, with beamtime allocated via a public call and peer-review selection) started on 7th May 2012 at the BL29 BOREAS beamline, dedicated to X-ray Magnetic Circular Dichroism technique. The experiment, focused on characterizing magnetic nanoparticles embedded in a high-Tc superconducting material, was the first of a long series continuing until today, with three user cycles (corresponding to their respective public calls) and a fourth call finishing evaluation within the last few weeks, to allocate beamtime during the first half of 2015. A few examples of experiments will be mentioned and briefly described, in order to get a feeling of the very diverse fields implied and the type of science therein. Some statistics of user access complement the information on specific experiment examples.

ALBA operates yearly 5000 to 6000 hours [4], gradually ramping up towards the latter number. An example of operations calendar will be shown to illustrate the way to organize operations and make them compatible with the necessary maintenance and resource-driven constraints.

As mentioned above in this abstract, ALBA is at the moment bulding two phase 2 beamlines. A schedule overview of both is given, in order to get an overall picture of the process involved.

Finally some considerations are given to the importance of outreach and education policies, which make the science and technology work done at the facility better known to present and future taxpayers (and potentially future scientists). The talk will finish with some considerations about the main issues to be considered during the next few years of the ALBA project.

References:
[1] www.albasynchrotron.es [2] J. Bordas et al., NIM A 543 (2005) 28-34. [3] M. Pont, in Proceedings of the 3rd International Particle Accelerator Conference (2012) 1659-1661. [4] http://www.cells.es/en/en/media/corporate-publication.

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Design and Performance of Storage Ring Light Sources

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Ideas for future synchrotron light source in Mexico

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ALBA, Accelerators Technology and Operation

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ALBA [1] is a third generation synchrotron light source, recently come into operation, located near Barcelona, Spain.
The talk, firstly, will cover an introduction to the ALBA design criteria to define the final layout of the accelerators, followed by a description of the accelerators and its main parameters.
Secondly, it will cover an introduction to the accelerators technologies involved in the construction of a light source, magnets, vacuum, RF, diagnostics, controls... with reference to the emerging new technologies required for the next generation of synchrotron light sources.
Finally, the commissioning and operational experience of ALBA will be covered.

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Accelerator Physics Challenges in Ultra-low Emittance Rings

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Accelerator Physics Challenges in Ultra-low Emittance Rings

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The Mexican Synchrotron Project in Morelos, A status Report

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A review of the range and objectives of the Mexican State of Morelos to support a National Synchrotron Light Source is presented. After a brief historical introduction, I will focus on the status of the project which is funded by a Conacyt-Morelos FOMIX (Joint Conacyt- Morelos State) fund.