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Sciences ACO, a Museum of Light and Matter

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Sciences ACO is a non-profit association based in Orsay (France). It manages a “Museum of Light and Matter” visited by more than 1,000 people each year. In this unique place, scientists and cultural mediators preserve, exhibit and explain pieces of the history of science & technology, to pass on the knowledge of this heritage to the audience.

The museum is located at the centre of the “LAL-LURE accelerator complex”, which was awarded the “Historic Site” label by the European Physical Society last September. The main piece of Sciences ACO is indeed the “Anneau de Collisions d’Orsay” (ACO), a lepton storage ring whose operation started in 1965 and ended in 1988. ACO was first used as an electron-positron collider. It led to important discoveries in accelerator physics and to many pioneering measurements of vector meson properties. In 1973, ACO became the first storage ring in Europe available to synchrotron light users. Ten years later, a free-electron laser was successfully operated at ACO – the second in the world, it was the first one in the visible bandwidth and the first at a storage ring. Rather than being decommissioned and disassembled like almost all accelerators in the world once they are turned off, ACO was carefully preserved by the very people who worked on it. The machine was later recognized as a French “historic monument” and the association, still very active, is now bringing three generations of scientists together.

Sciences ACO visitors – among them there are many high school students and teachers – come to learn about the progress of science and the evolution of the technologies over more than four decades. As an example, a new room was recently opened in the museum to display the control room of the former LAL linear accelerator. This record of the seventies allows our guides not only to explain how this machine was operated and what its performances were, but also to shed light on the extraordinary advances of electronics and computing. Therefore, Sciences ACO is more than just a historical museum: it is a driving force for the development of outreach and pedagogical activities on the Paris Sud University campus and in the neighboring towns. Moreover, real demonstration apparatuses – like the “Electrons’ ronde”, probably the world’s smallest interactive electron storage ring model – are being designed by engineering experts from the association, while virtual visits are being developed to enrich the visitors experience.

All of this has been obtained by a small group of dedicated individuals, within the limited financial resources of the association. The history, the present activity and the prospects of Sciences ACO will be presented in the talk proposed in the “Education and Outreach” ICHEP 2014 parallel session.

Summary

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