



## 2010 André Lagarrigue Prize

Under the sponsorship of the French Physical Society (SFP) and on the occasion of the 50th birthday of the Orsay Linear Accelerator Laboratory (LAL) in 2006, a prestigious Prize, awarded every second year, was created in honor of Professor André Lagarrigue. Director of LAL from 1969 until his untimely death in 1975. André Lagarrigue discovered, together with an European team, the weak interaction neutral currents in 1973, a crucial step in establishing the present theory of particle physics. The André Lagarrigue Prize rewards a senior physicist who has lead a large experimental project including conceptual design and realisation of a complex apparatus and has extracted the best of it with a strong team spirit and has carried out his work in a French laboratory or in close collaboration with French teams. This prize is co-financed by CEA, CERN, Ecole Polytechnique, IN2P3, LAL and the University Paris Sud 11.

The international jury of the Andre Lagarrigue Prize<sup>1</sup> met under the chairmanship of IN2P3 director Jacques Martino, and reviewed the nominees proposed by the French community of particles physics following a call for proposal sent to all French lab directors. The winner of the 2010 Andre Lagarrigue Prize is **Michel Davier**, Professor of Physics at the University Paris Sud 11 and a member of the French Academy of Science.

Michel Davier's worldwide authority in the field of particle physics is undisputed and his prominent role is in every way worthy of that of André Lagarrigue. They share the same qualities of deep understanding of physics and of experimental devices of great complexity, of tenacity and pedagogy with the same passion for training young people.

Born in 1942, a French citizen, graduate of the Ecole Normale Supérieure de Saint Cloud, Michel Davier defends his thesis at the University of Paris in 1969 after two years at SLAC (Stanford, USA) and begins his career at the Orsay Linear Accelerator Laboratory. After spending a year at CERN, he returns to SLAC from 1971 to 1975 as assistant professor then associate professor. While his research at this time is mainly centered on hadron scattering, he changes direction after the "revolution of November 1974" provoked by the discovery of the quark  $c$  with that of the  $J/\Psi$  resonance, charmed mesons, then a year later that of the tau lepton.



Back in France, Michel Davier focuses his research onto  $e^+e^-$  colliders: CELLO where he contributes to building wire chambers, ALEPH and BABAR. In these three experiments,

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<sup>1</sup> J. Martino (IN2P3, président), P. Bloch (CERN), J.C. Brient (Ecole Polytechnique), A. Pullia (INFN - Milan), J. Iliopoulos (ENS - Paris), G. Kalmus (RAL), M. Ducloy (SFP), D. Leith (SLAC), M.N. Minard (LAPP), V. Ruhlmann-Kleider (DAPNIA/CEA), M. Spiro (CNRS), A. Wagner (DESY), G. Wormser (LAL) et F. Zomer (Université Paris Sud 11)

Michel Davier masterfully manages to extract all the essence contained in the data to obtain measurements of extraordinary precision on the properties of the tau lepton as well as contributions from strong interactions to the magnetic moment of the muon and electromagnetic coupling at very short distance. These last quantities allow, by comparing theory and experimental measurements, to open a window on new physics, in particular the Higgs boson and supersymmetry. Michel Davier devotes himself to both theoretical and experimental study of the strong interaction in this area at the intersection of his many skills and becomes one of the world's leading experts. Today, thanks to his work on the muon magnetic moment, there is a strong presumption of the existence of new physics. The LHC should soon provide confirmation. The measurements performed by Michel Davier on the tau lepton, among others, lead to extract the most accurate value of the strong interaction coupling, to prove the universality of three generations of leptons with respect to weak interaction, and contribute to indirect constraints on the mass of the Higgs boson.

Another area of interest for Michel Davier concerns the search for gravitational waves. At time of emergence of the VIRGO detector project proposed to CNRS by physicists in France and Italy, he had a very important role in the discussions between CNRS and IN2P3, including LAL and LAPP (Annecy). His influence and his exceptional tenacity contributed significantly to the acceptance of the project. Around him a VIRGO group formed at LAL who built an important part of this giant interferometer with two arms of 3 km constituting the largest vacuum volume in Europe. In 2009, VIRGO has reached its nominal performance that makes it the most sensitive interferometer in the world in the low frequency range, which allows to hope for the observation of the first signals of gravity waves in the coming years.

These achievements in themselves justify the award but it is also worth recalling the passion of Michel Davier for teaching (he succeeded André Lagarrigue as professor at Orsay) and educational outreach. Michel Davier has an exceptional talent for explaining in simple words mysteries of the subatomic world to the unexperienced. This talent is very often called upon in courses, books, radio programs, but also in public conferences such as at the University of Paris-Sud, Cité des Sciences and Industry, and very recently at the first "Night of the particles" in July 2010.

Michel Davier has been Director of the Linear Accelerator Laboratory Orsay from 1985 to 1994. Under his mandate, the LAL has built the LEP preinjector (LIL) and the linear accelerator for the free electron laser CLIO and opened to the astroparticles domain with Themistocle, Eros and VIRGO.

Michel Davier is the winner of the Three Physicists Prize from ENS in 1991 and of the Gentner-Kastler Prize from SFP and its German counterpart the DPG in 1993. In 1996, Michel Davier was elected a Member of the French Academy of Sciences.

So it's with great pleasure that the jury awards the André Lagarrigue Prize 2010 to Michel Davier, an outstanding physicist whose career is in line with that of his illustrious elder.