



SEMINARS SEMINAIRES

Tuesday 28 July

DETECTOR SEMINAR

at 11.00 hrs – ECP Conference Room
bldg 13/2-005

High-pressure gas ionisation calorimetry for the forward region in LHC experiments

by Sergei DENISOV / IHEP, Protvino

A hadron calorimeter, operated with gas at high pressure in the ionization mode, has been studied in a high energy beam of electrons and hadrons. The calorimeter uses a planar electrode geometry with a 4 mm ionization gap. A gas mixture of 95% Ar / 5% CF₄ at pressures up to 40 atm and a signal shaping of 40 ns was used. The dependence of the energy resolution on gas pressure, the relative response to electrons and hadrons and possible improvements in the signal noise ratio will be discussed. The calorimeter has intrinsically a very high radiation resistance. Applications of this concept to the energy measurement at very small angles in high luminosity collider experiments will be discussed.

Tuesday 28 July

CERN PARTICLE PHYSICS SEMINAR

at 16.30 hrs – Auditorium*

A precise measurement of the tau mass at BES

by David HITLIN / California Institute of Technology

* Tea & coffee will be served at 16.00 hrs

Wednesday 29 July

PS SEMINAR

at 11.00 hrs – PS Auditorium
bldg 6/2-024

Recent advances in symbolic computing applied to accelerator physics

by B. AUTIN / CERN-PS

Modern symbolic computing languages are both powerful and user friendly, especially when the technique of functional programming is mastered; they provide a valuable tool in

various fields of accelerator physics. Examples will be given in beam optics (low beta insertions), magnet technology (permanent quadrupoles), accelerator control (damping of coherent oscillations), and in dynamics of non linear systems (perturbative solution of Hamilton's equation to a conceptually arbitrary order).

Wednesday 29 July

THEORETICAL SEMINAR

at 14.00 hrs – TH Conference Room

Numerical computation of running coupling constants

by Ulli WOLFF / CERN

In asymptotically free theories like QCD, the free parameter(s) can be fixed by low-energy non-perturbative quantities (masses, string tension, etc.). Then running coupling constants like $\alpha_{\overline{MS}}(q)$ are computable numbers if q is given as a (possibly large) multiple of the low-energy scale. I describe a lattice method for such a computation that thus connects the non-perturbative sector with the high-energy regime. In spite of the large scale-factor involved, a controlled removal of the cut-off (continuum limit on the lattice) will be possible by a recursive finite size scaling technique that avoids such concepts as expansion in the bare coupling and asymptotic scaling. Explicit demonstrations are presented for a 2-d sigma model and a 4-d Yang-Mills theory.

Friday 31 July

MEETING ON PARTICLE PHYSICS PHENOMENOLOGY

at 14.00 hrs – TH Conference Room

Technicolour, top quark condensates and all that
by Stephen KING / University of Southampton

I review technicolour and extended technicolour theories, then discuss the ideas of walking technicolour and strong extended technicolour. I then examine the constraints placed on these theories from high precision experiments. I also discuss the idea of a top quark condensate and fourth family condensates. I show how the inclusion of "irrelevant operators" can change the naive predictions of the top quark mass and Higgs boson mass. Finally, I discuss the experimental prospects for both technicolour and the top quark condensate (or fourth family condensates) based on longitudinally polarized gauge boson scattering experiments at the LHC/SSC.