

SEMINARS SEMINAIRES

Monday 24 July*

COMPUTING COLLOQUIUM

at 16.00 hrs – Auditorium

Performance Trends in High-End Processors

by George A. SAI-HALASZ / IBM, T. J. Watson Research Center, Yorktown Heights, N.Y. 10598

Performance trends and limits are projected for general purpose high-end processors. The key in identifying trends is the understanding of the pivotal factors at any given stage of technology progression. One such parameter is the physical area of the processor. In coming technologies there will be opposite demands placed on the system's area stemming from a need to reduce the proportion of interconnection capacitance and to send signals across the processor. Contrary to the usual perception, delays resulting from wiring capacitance decrease if processor area increases, while the minimization of signal travel times favors reducing area. The system size trade-off in the case of bipolar processors is primarily determined by power density, while CMOS processor sizes are determined by wirability requirements. To achieve the full potential of CMOS, interconnections will have to be carefully planned. The performance limits of bipolar and room temperature CMOS uni-processors are shown to be very similar. The highest performance technology on the horizon is liquid nitrogen temperature CMOS. Technologies based on III-V compound devices, or exotic quantum structures, are not likely to play a role in future general-purpose high-end systems.

* Please note the unusual day

Wednesday 26 July

PS SEMINAR

at 11.00 hrs – PS Auditorium

Commissioning and Early Operational Results from CEBAF

by Charles SINCLAIR / CEBAF, Newport News, U.S.A.

In the CEBAF accelerator, beam is recirculated for five passes through two 400 MeV superconducting linear accelerators. Commissioning studies, which have been scheduled to track accelerator construction, have been underway since the injector installation in late 1991. During the most recent operating cycle, low duty factor full energy 5 pass beam has been delivered to the first of three experimental halls, and high current CW beam has been established through the first three passes. Recent results and future plans will be discussed.

Wednesday 26 July

THEORETICAL SEMINAR

at 14.00 hrs – TH Conference Room

Cosmic strings, neutrinos and the formation of high redshift quasars

by Robert BRANDENBERGER / Brown University, USA

The observation of high redshift quasars is opening a new window to the exploration of the early Universe and sets stringent constraints on structure formation theories. In this talk, the implications for the cosmic string theory of structure formation are studied. A theory in which cosmic strings seed

structures and in which the dark matter is hot (30 eV neutrinos) is shown to be in agreement with recent observations.

Wednesday 26 July

SEMINAR

at 16.00 hrs – Council Chamber

Why should the public understand Science?

by John DURANT / Professor of the Public Understanding of Science, Imperial College & Assistant Director of the Science Museum, London

The relationship between science and the rest of society is undergoing a profound change. For several hundred years, scientists have been granted great freedom to pursue their inquiries in return for the open publication of their results. Today, this implicit "social contract" is under threat: the costs of scientific research, the uncertainties surrounding research results and the potential for misuse of research in the public domain have combined to create a new and altogether more critical climate of public opinion about science and technology. The lecture will explore the implications of these changes, in the context of recent initiatives to improve the public understanding of science.

Wednesday 26 July*

SPECIAL COLLOQUIUM

at 16.30 hrs – Auditorium**

Present and Future Programme of KEK

by H. SUGAWARA / Director General KEK (Japan)

* Please note unusual day.

** Tea & coffee will be served at 16.00 hrs.

Friday 28 July

MEETING ON PARTICLE PHYSICS PHENOMENOLOGY

at 14.00 hrs – TH Conference Room

Resummation of running coupling effects in semi-leptonic B meson decays and extraction of $|V_{cb}|$

by Patricia BALL / CERN

We present a determination of $|V_{cb}|$ from semi-leptonic B decays that includes resummation of supposedly large perturbative corrections, originating from the running of the strong coupling. We argue that the low value of the BLM scale found previously for inclusive decays is a manifestation of the renormalon divergence of the perturbative series starting already in third order. A reliable determination of $|V_{cb}|$ from inclusive decays is possible if one either uses a short-distance b quark mass or eliminates all unphysical mass parameters in terms of measured observables, such that all infra-red contributions of order $1/m_b$ cancel explicitly. We find that using the MS running mass significantly reduces the perturbative coefficients already in low orders. The scheme and scale dependence of the results is reduced. For a semi-leptonic branching ratio of 10.9 % we obtain $|V_{cb}|(\tau_B/1.50 \text{ ps})^{1/2} = 0.041 \pm 0.002$ from inclusive decays, in good agreement with the value extracted from exclusive decays.

Thursday 3 August

AT SEMINAR

16.00 to 17.00 hrs – AT Auditorium, bldg 30, 7th floor

Recent Developments in Magnetron Sputtering Systems

by R.D. ARNELL / Research Institute for Design, Manufacture and Marketing, University of Salford, Salford, UK