Physics monitor

CERN/BEIJING Joint school

The CERN Accelerator School usually confines its activities to CERN's Member States, with the occasional exception of a joint school with its US counterpart. Recently a CAS team headed eastwards for a change, bound for Beijing's Institute of High Energy Physics (IHEP), for a school on particle physics and accelerator topics related to European plans for a Large Hadron Collider at CERN.

The School was CAS' first in an Asian country and in many ways was an experiment. While lectures were aimed at a basic level for the benefit of the many students having their first taste of the subject, there was still time to handle more detailed questions from specialists. All local arrangements were handled entirely by the local Organizing Committee with admirable efficiency.

In addition to H Lengeler, S. Myers, D. Treille, F. Pauss, W. Scandale and E. Wilson from CERN, the team included G. Horlitz (DESY), J. Perot (Saclay) and H.S. Chen, Z. Chuang and Z. Guo from IHEP.

Lecturers' initial misgivings about how much of this tough material would be absorbed were soon dispelled. Each lecture had a one-hour tutorial to iron out any problems, and these sessions became quite animated.

So successful was the experiment that CAS plans to bring other Asian countries, including Japan and India into its circle of friends when time permits.

Academia Sinica President Zhou Guang Zhao welcomes CERN Accelerator School Head Ted Wilson to Beijing's Institute of High Energy Physics (IHEP).

Dark matter, hot and cold

Cosmologists responded enthusiastically to the announcement at the Washington meeting of the American Physical Society in April 1992 that the Cosmic Background Explorer (COBE) had succeeded in detecting primordial anisotropies in the cosmic microwave background radiation (CMB - June 1992, page 1).

The COBE satellite was launched in November 1989 into an orbit approximately 900 km above the Earth, carrying instruments to make precise measurements of the spectrum and anisotropy of the CMB. Data from the Far-Infra Red Absolute Spectrophotometer (FIRAS) beautifully shows the CMB spectrum to be that of a black body at a temperature of 2.73 ± 0.06K.

An even more important result, at least from the viewpoint of theories of large scale structure formation (LSS), comes from the Differential Microwave Radiometer (DMR) which provided the first evidence for CMB anisotropy. Some anisotropy on the angular slice probed by COBE is expected in any reasonable model of LSS.

COBE's measurement of the quadrupole anisotropy at six parts per million provides an important clue for developing a 'standard model' of LSS. The COBE numbers are in remarkably good agreement with the predictions of a particularly simple class of LSS models proposed almost a decade ago, with far reaching implications for dark matter searches.

Hot big bang cosmology predicts the existence of the CMB, discovered by Penzias and Wilson in 1965.