

LEP1 Operation, 1989-1995, G. ARDUINI,
R. BAILEY, T. BOHL, F. BORDRY,
H. BURKHARDT, K. CORNELIS, P. COLLIER,
A. FAUGIER, V. HATTON, M. JONKER,
M. LAMONT, S. MYERS, G. DE RIJK, G. ROY,
H. SCHMICKLER, J. WENNINGER, CERN - In
October 1995 the last run foreseen for dedicated Z
production at CERN was performed in LEP, thereby
bringing to a close the first phase of operation of this
machine. A total luminosity of 200 pb^{-1} has been
delivered to each of the four experiments, which
together have recorded the decays of over 20 million
Zs. Machine performance has increased to the extent
that a good weekend in 1995 saw as much luminosity
delivered as in the whole of 1989. This improvement
has been made possible by a combination of several
things. Over and above general operational expertise,
special care went into the treatment and stabilisation of
the closed orbit in order to obtain reproducible high
performances with vertical beam-beam tune shifts
exceeding values of $\epsilon_y = 0.04$. Both Pretzel and Bunch
Train schemes have been introduced to double the
number of bunches, and high-tune optics have been
developed to produce low transverse emittances which
allow operation at the beam-beam limit throughout
physics runs. Included in the integrated luminosity are
data taken off the peak of the Z resonance, to allow
precise determination of the mass and width of this
particle. Accurate measurements of the beam energy
during these runs have brought to the fore some
unusual effects.