

Beam Extraction at the Cooler Synchrotron COSY,
H. STOCKHORST, U. BECHSTEDT, J. DIETRICH,
R. MAIER, S. MARTIN, D. PRASUHN,
A. SCHNASE, H. SCHNEIDER, R. TÖLLE,
FORSCHUNGSZENTRUM JUELICH GMBH,
Germany - COSY Juelich is cooler synchrotron and
storage ring delivering protons in a momentum range
from 270 to 3300 MeV/c. Internal as well as external
experiments are possible. At present extraction beam
lines guide the beam to three external experiments. To
avoid crossing the transition energy the flexibility of
the COSY optics allows to shift the transition energy
upwards during ramping up the energy. This flexibility
however makes necessary a careful setting of the
sextupoles to extract the beam via a third integer
resonance and, simultaneously, to adjust the desired
chromaticities. For this purpose 18 sextupoles are
installed in COSY which can be combined in different
families. At present spill times of more than 30 s are
possible with a rather good extraction efficiency (³
15%). In addition to conventional resonant extraction,
two new developed digital noise generator are used for
stochastic extraction. One system is applied for beam
shaping, the other one for swept noise. The paper
reports on the difficulties and how they were overcome.