# Slow Extraction Workshop Survey

1. Institution: Forschungszentrum Juelich GmbH
2. Machine: Cooler Synchrotron COSY
3. Beta-function at the E-septum 4.5 m
4. Alpha E-Septum 0.6
5. Dispersion D at E-septum 5.8 m
6. D’ at E-septum 1.1
7. Beta-function M-septum 10.4 m
8. Alpha M-septum -0.2
9. Dispersion M-septum 14.5 m
10. D’ at M-septum 0.03
11. Beam: protons and deuterons polarized/un-polarized
12. momentum: extraction in the range 300 (540) to 3300 MeV/c
13. Max Current in the machine 5e10 particles
14. Beam emittances, normalized -
15. Momentum spread, rms 0.05% in ring
16. Incoherent tune shift -
17. Beam bunched No, continuous coasting beam
18. Resonance 3rd integer, longitudinal feeding: beam shaping and

swept noise covering the resonance

1. Chromaticity correction Yes, horizontal positive value to attain Hardt condition
2. Feedback system -
3. Other control systems feedforward ramps for noise amplitude possible
4. Extracted beam Intensity < 5e09 p/s, depends on requirement of experiment
5. Efficiency: app. 98%
6. Local beam loss -
7. Distributed losses -
8. Spill length variable, typical ten seconds up to one hour
9. Micro spill quality in 1996: 50 Hz ripple, could be suppressed w.r.t. the

average spill by stochastic extraction, see example in talk

and enclosed data files, bin size 1 ms.

1. Spill variations
2. Additional notes: Measurement of spill quality: see talk
3. Data files: Two data files included:

Resonant extraction by moving the tune:

**“Conventional Extraction1996.TXT”**

Stochastic extraction, here uniformly shaped noise covering the resonance and the beam distribution is applied. The amplitude of the noise is moved in a pre-defined way so that the spill became nearly constant during extraction.

Bin size of both data file 1 ms. File name:

**“Stochastic Extraction1996.TXT”**