

Experiment Proposal: AR_2012_No2

Title	Author/Spokesperson
Test of duty factor measurement	A. Reiter (1431)

Summary & Aim

- These tests are part of the R&D for **PROJECT ABC**
- Measurement of the duty factor of the slowly extracted SIS18 spill using 2 plastic scintillators at the end of the HTP beam line
- Requested beam time: 1 shift

Machine parameters

Machine	SIS18
Mode	parasitic mode during B-exp at HTP
Exp. area	HTP
Ion species	Any
Beam energy	Any
Spill length	Any
Particle number	Any
Repetition rate	Any
Shifts	1
Beam Time Period	Starting from March 2012
Health & Safety	Not concerned

Experiment procedure

The experiment uses the particle shower at the end of the beam line to monitor the duty factor of the spill indirectly. Therefore, the tests can be carried out parallel to any other experiment at HTP.

Follow approach described in NIM A339(1994) 425-428:

$N_{A/B}$ = no. of counts of det. A/B during T

N_{AB} = no. of random coincidences during T

τ = coincidence resolving time

$$\text{duty factor} = (N_A \times N_B \times \tau) / (N_{AB} \times T)$$

Experiment Setup		
Exp. area	HTP	
Description of setup	2 plastic scintillators (GSI BLM type) connected to electronics in AP container (coincidence logic). Then send signals to Ablass	
Duration of setup	Any	
DAQ & Electronics	2 detectors – discriminator – coincidence unit	
Software	Detector rates and the coincidence rate are monitored in a scaler 3 channels in Ablass system required	
Trigger	Standard Ablass (start cycle, end cycle)	
Experiment Preparation / Required support		
Estimated amount of time, manpower and equipment		
Estimates or simulations	Not required	
Mech. Workshop	Not required	
Beam Line Installation	2 BLM-type scintillators next to beam line	
Electronics & DAQ	Coincidence logic, Ablass readout	
Control System Integration	Tobi/Harald	HV for two detectors still available?
On-site tests		
Modification of exp. area	No	
Dismantling	No special requirements	
Remarks & Comments		