A Collimation Experiment with Protons at 120 GeV, N. CATALAN LASHERAS, G. FERIOLI, J.B. JEANNERET, CERN - The collimation system of LHC must absorb the flux of beam halo with high efficiency. We developped a precise model of a two-stage collimation system, but in the abscence of a working high performance collimation system, it was up to now not confronted to experimental data. To improve our confidence, a three stage collimation experiment was ran in the SPS ring at CERN. A coasting beam was made to diffuse transversely by applying random noise. Three collimators were arranged as primary, secondary and tertiary ones. The latter one is used as an analyser to measure the efficiency of the simplified two-stage collimation system made by the two other collimators. The rate of inelastic interactions was measured with scintillating counters installed near every collimator. Data were recorded for many different relative retractions of the collimators. Our model of the experiment, which simulates multiturn turn tracking and elasting scattering in the collimator blocks compares well with the data.