

# The spin structure function of the proton, $g_1^p$ , at low $x$ and low $Q^2$ from COMPASS

V. Andrieux<sup>\*1</sup> on behalf of the COMPASS collaboration

<sup>1</sup>University of Illinois at Urbana-Champaign

July 1, 2016

## Abstract

We present COMPASS results on the longitudinal double-spin asymmetry,  $A_1^p$ , and the spin dependent structure function of the proton,  $g_1^p$ , in the quasi-real photoproduction regime. Data were collected by scattering a longitudinally polarised muon beam off a longitudinally polarised proton target. Two data sets with a beam energy of respectively 160 and 200 GeV were taken, which improve, once combined, the statistical precision on  $A_1^p$  and  $g_1^p$  by a factor of 12 compared to the previous SMC experiment covering a similar kinematic region. The high statistical precision allows  $A_1^p$  and  $g_1^p$  to be measured in several 2-D grids,  $(x, Q^2)$ ,  $(\nu, Q^2)$ ,  $(x, \nu)$  and  $(Q^2, x)$  within the following kinematic domain:  $4.0 \times 10^{-5} \leq x \leq 4.0 \times 10^{-2}$ ,  $0.001 \leq Q^2 \leq 1 \text{ (GeV/c)}^2$  and  $14 \leq \nu \leq 194 \text{ GeV}$ . The presented measurements provide inputs to better constrain non-perturbative models of electroproduction.

---

<sup>\*</sup>vincent.andrieux@cern.ch