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First results on A₁^p and g₁^p at low x and low Q² from COMPASS

Tuesday, 29 April 2014 11:00 (30 minutes)

The COMPASS experiment at CERN has collected
a large sample of about 700 million events of
quasi-real photoproduction in polarised mu;⁺-p
scattering using a beam momentum of 160
(GeV/c)² in 2007 and 200 (GeV/c)² in 2011.
The events have a Bjorken scaling variable in
the range 0.00004<x<0.04
and a four-momentum transfer squared in the range
0.001<Q²<1 (GeV/c)².
They allow the most accurate determination to date
of the longitudinal double spin asymmetry A₁^p
and of the spin-dependent structure function g₁^p
of the proton in the region of low x and low Q².
These data complement our data for a polarised
deuteron target. They have an order of magnitude
better precision than the previous SMC results.

The preliminary results yield non-zero, positive
asymmetries A₁^p and structure function g₁^p
in the full studied ranges of x and nu;, the virtual
photon energy. It is the first time that spin effects
are observed at such low x.

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