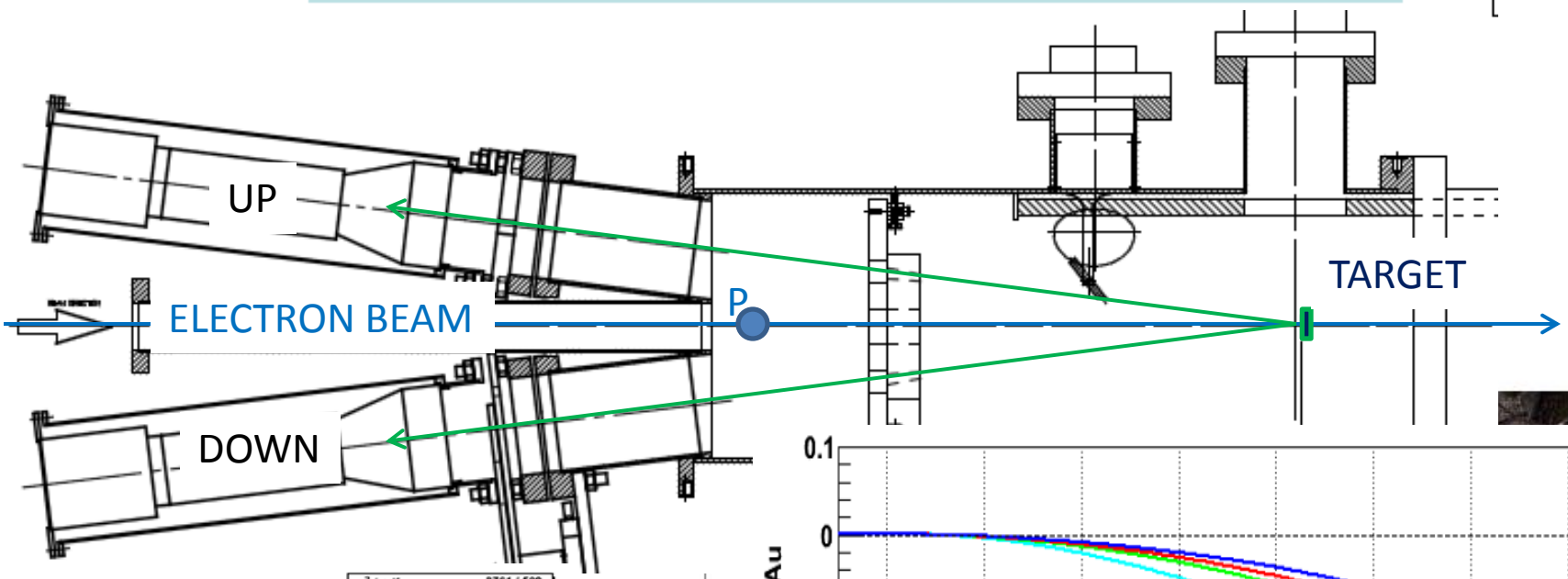
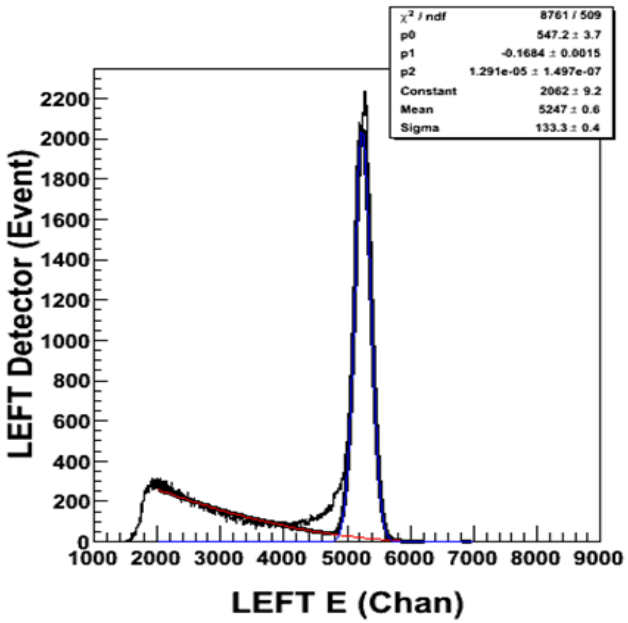
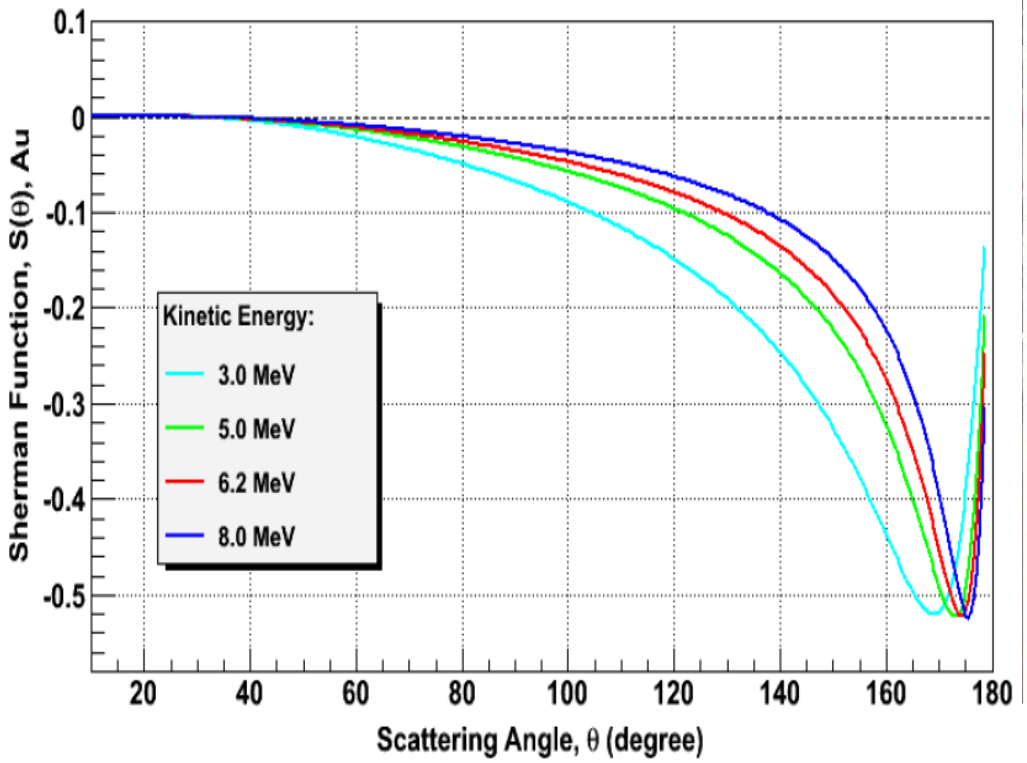
$$\sigma(\theta) = I(\theta)[1 + S(\theta)\vec{P} \bullet \hat{n}]$$

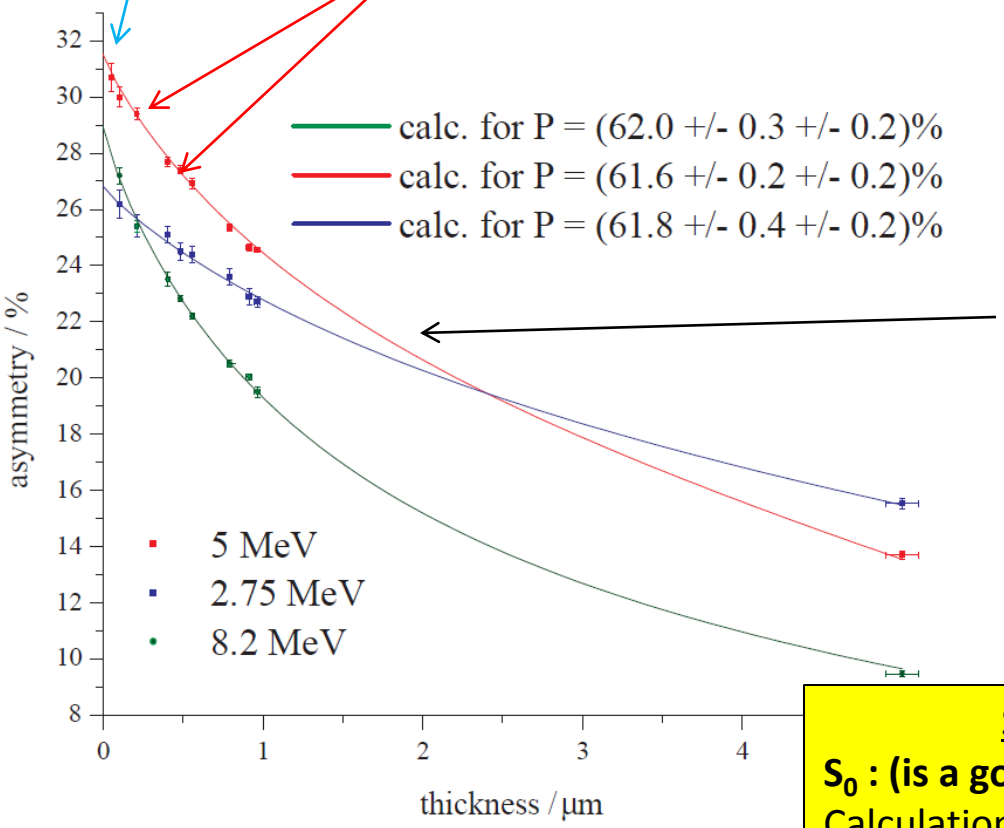






S_{eff} (effective analyzing power) depends on foils thickness

$P = S_0 / A_0$

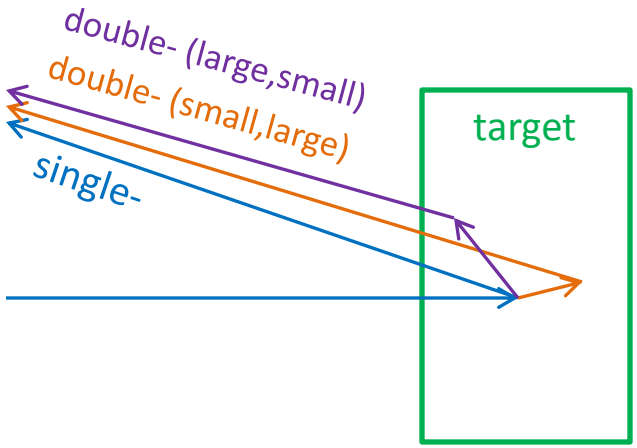


In late 90's Mott was calibrated and with help of Charles Horowitz a model-dependency was successfully tested.

The results and analysis were not well documented or published in a peer reviewed journal.

We would like to repeat the calibration & model-dependent analysis, ensuring sound theoretical treatment and exploring improvements in simulation

Our goal is to demonstrate high precision ~1%.



Strategy for Precision Mott Polarimetry

S_0 : (is a goal of < 0.5% possible?)
Calculation and estimate of uncertainty on nucl. size
Size of radiative corrections and relative accuracy ~30% ?

A_0, S_{eff} : (goal < 0.5%)
Strategy is to provide simulation without approximation
Apply (σ, S, T, U) code/tables in Geant4 simulation

A_{exp} : (goal < 0.5%)
Target induced background : quantify by simulation
Instrumental and statistical uncertainties can be kept <0.4%