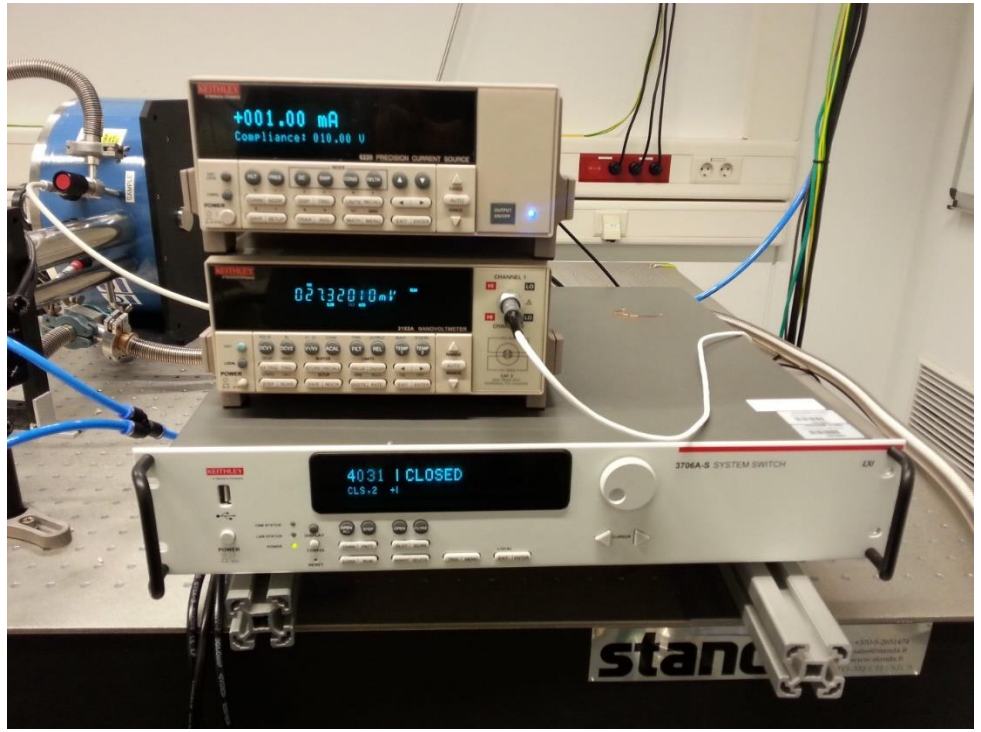
st MOKE
a status upgrade

stMOKE:

Polarization rotation measures magnetization

new:

4 point DC resistance measurement option



baseline assumption:

axissymetric line source: $\phi\,(r) = \alpha \ln(r) + c$

=> sample of uniform thickness d

For a given current I entering at P and leaving at Q,
The potential at e.g. R is given by

$$\phi(R) = -\frac{I\rho}{\pi d}\ln(\frac{a+b}{b})$$

=> van der Pauws theorem:

Furthermore: $R_{AB,CD} = R_{CD,AB}$

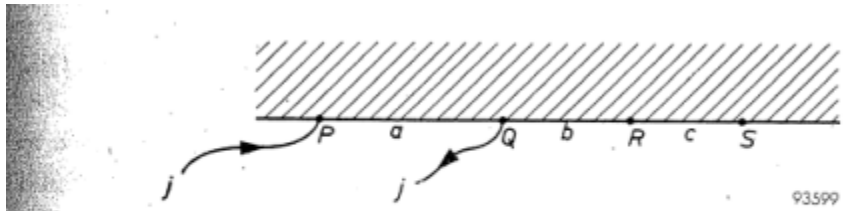
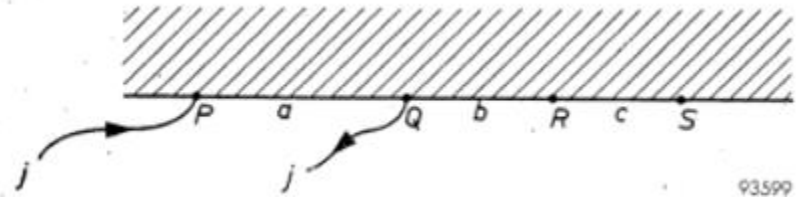


Fig. 4. A sample in the form of a semi-infinite plane with four contacts along its boundary for which eq. (1) is proved first.

L. J. van der Pauw
A method of measuring specific resistivity and Hall effect of discs of arbitrary shape.
Philips Research Reports, Vol. 13, No.1 (1958)

$$\exp\,(-\pi R_{\mathrm{AB,CD}}\,d/\varrho) + \exp\,(-\pi R_{\mathrm{BC,DA}}\,d/\varrho) = 1\,,$$



conformal mapping

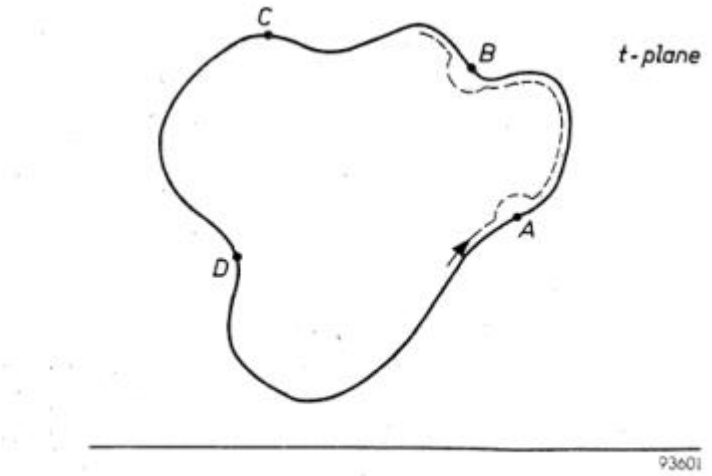
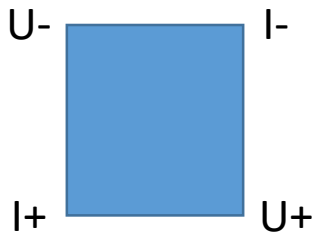
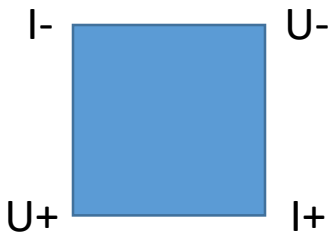


Fig. 6. A sample of arbitrary shape, lying in the complex t-plane.

$f(z) = u(x,y) + i\, v(x,y)$ → $f'(z) = j(x,y) + i\, k(x,y)$

$\frac{d}{\rho} R_{AB,\,CD}$ invariant under such transformations





configuration 1

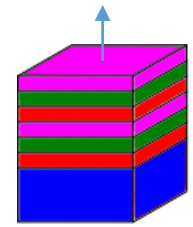
configuration 2

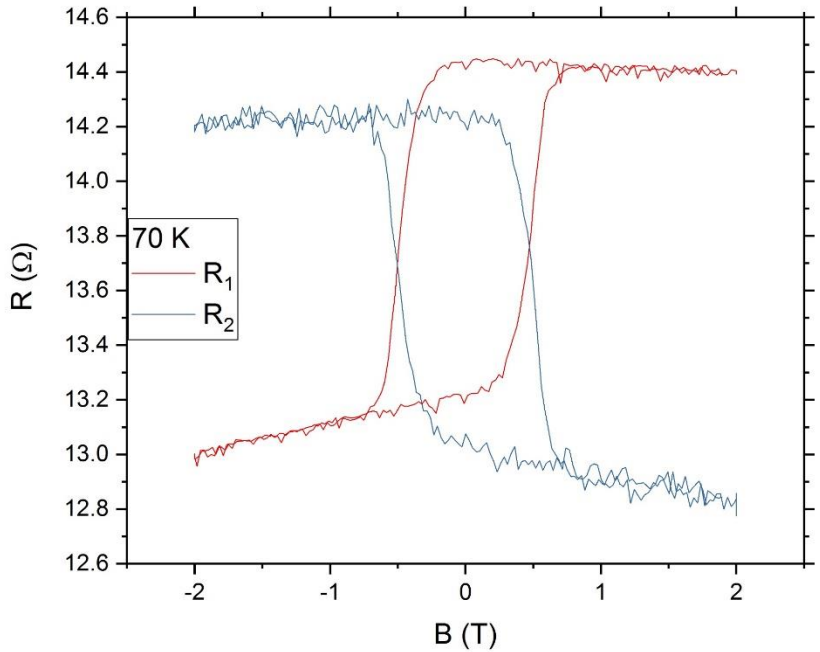
$R_1(\underline{B},\underline{M}) = R_0 + R_{magneto}(M) + R_{hall}(B_\perp, M_\perp)$

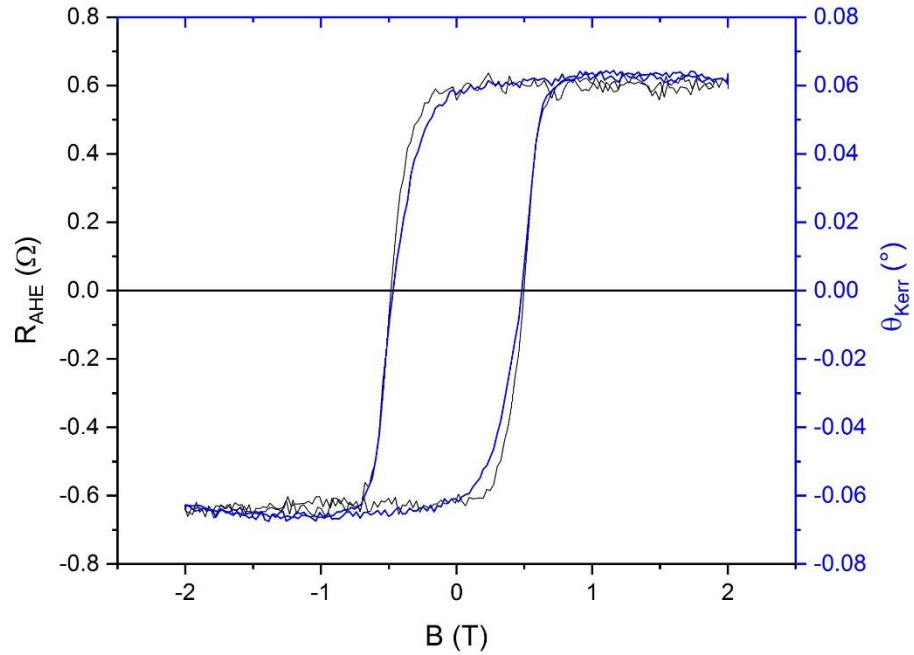
$R_2(\underline{B},\underline{M}) = R_0 + R_{magneto}(M) - R_{hall}(B_\perp, M_\perp)$

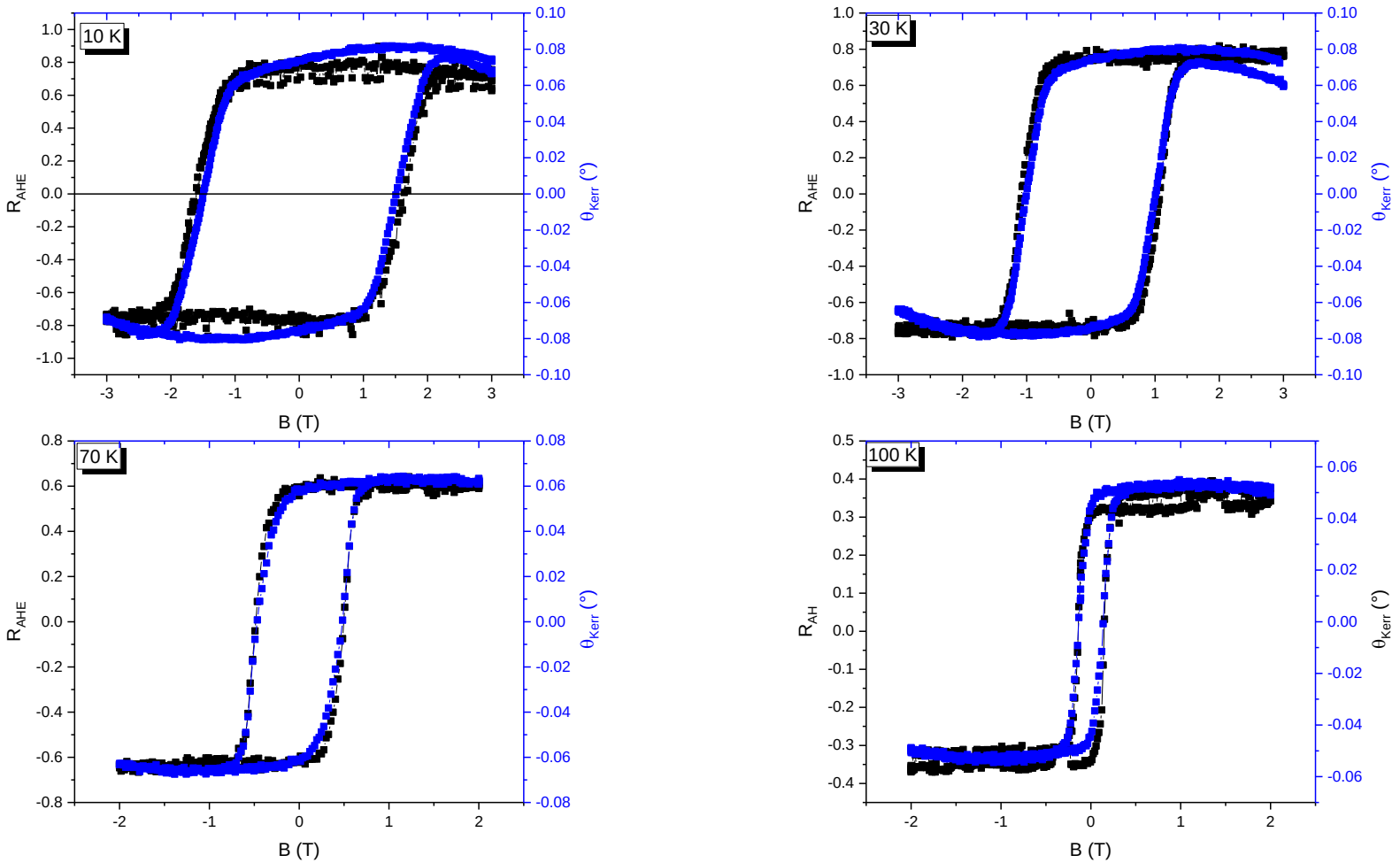
$$R_{Hall} = A_{NHE} H_z + A_{AHE} M_Z$$

$[(6\ ML)SrRuO_3\ |SrHfO_3\ |SrZrO_3\ ]_6//SrTiO3$








10 K
30 K
70 K
100 K
R_AHE
R_AH
θ_Kerr (°)
B (T)

Thank you for your attention