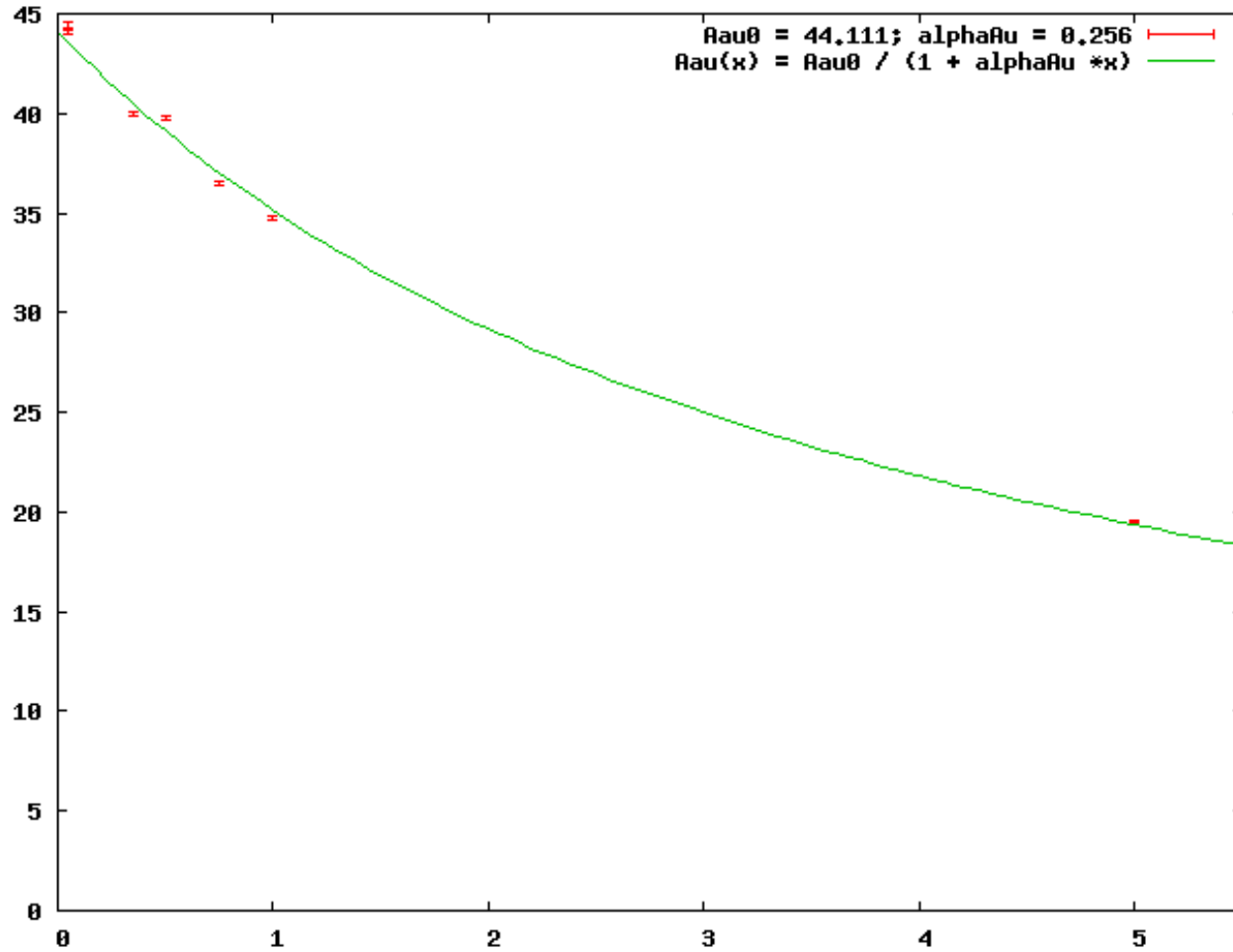


Gold – Asymmetries vs Target Thickness Data

Foil Thickness (um)	Beam Current (uA)	Beam Momentum (MeV/c)	Horizontal Mott Asymmetry (Ax_phy) (%)	Vertical Mott Asymmetry (Ay_phy) (%)	Horizontal Detector Asymmetry (Ax_det) (%)	Vertical Detector Asymmetry (Ay_det) (%)	Horizontal Beam Current and Target Thickness Asymmetry (Ax_beam) (%)	Vertical Beam Current and Target Thickness Asymmetry (Ay_beam) (%)
5	0.122	5.699	0.201 ± 0.069	19.548 ± 0.069	2.881 ± 0.068	1.059 ± 0.072	0.530 ± 0.069	0.417 ± 0.072
1	0.859	5.699	0.251 ± 0.103	34.792 ± 0.100	2.870 ± 0.103	1.755 ± 0.113	0.942 ± 0.103	0.263 ± 0.113
0.75	1.108	5.699	0.181 ± 0.106	36.508 ± 0.102	2.862 ± 0.106	2.042 ± 0.118	1.113 ± 0.106	0.282 ± 0.118
0.5	1.596	5.699	0.312 ± 0.116	39.739 ± 0.110	3.126 ± 0.116	1.814 ± 0.131	1.417 ± 0.116	0.261 ± 0.131
0.35	1.933	5.699	0.338 ± 0.120	39.990 ± 0.114	2.854 ± 0.119	1.697 ± 0.135	1.085 ± 0.119	0.280 ± 0.135
0.05 (1)	2.627	5.699	0.361 ± 0.171	44.160 ± 0.160	3.210 ± 0.171	0.976 ± 0.199	1.666 ± 0.171	0.234 ± 0.199
0.05 (2)	2.230	5.699	0.097 ± 0.223	44.360 ± 0.210	2.116 ± 0.223	1.172 ± 0.261	1.379 ± 0.223	0.531 ± 0.261

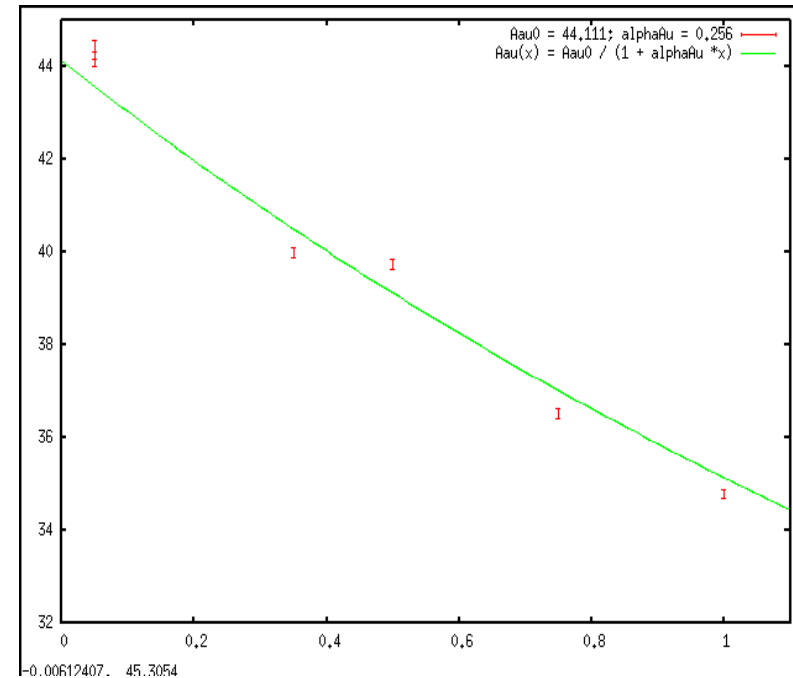
- **Hall C Laser** at repetition rate **31 MHz**
- 1/2 Wave Plate state alternated between IN and OUT

Gold – Thickness vs Vertical Mott Asymmetry



Thickness (um)	Vertical Asymmetry (%)	Uncertainty (%)
5	19.54785919	0.069419082
1	34.79233046	0.099728434
0.75	36.50794476	0.102499582
0.5	39.73921066	0.110489932
0.35	39.99009375	0.113531039
0.05	44.16049341	0.160451524
0.05	44.36033989	0.209641786

Zoomed In View
 Thickness[0, 1.1], Asymmetry[32, 45]



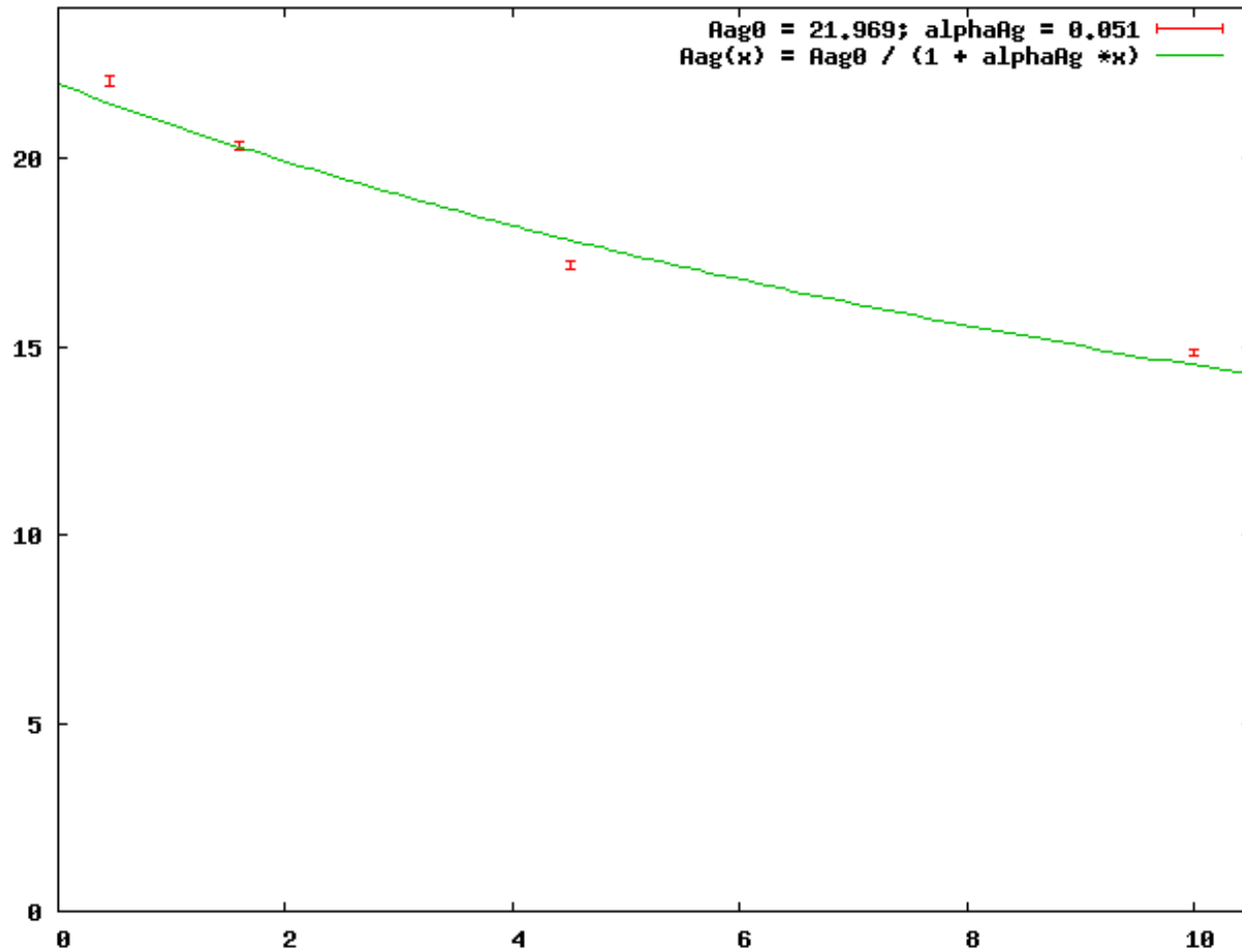
$Au_0 = 44.1113 \pm 0.3863$ (0.8757%)
 $\alpha Au = 0.255568 \pm 0.009955$ (3.895%)

Silver – Asymmetries vs Target Thickness Data

Foil Thickness (um)	Beam Current (uA)	Beam Momentum (MeV/c)	Horizontal Mott Asymmetry (Ax_phy) (%)	Vertical Mott Asymmetry (Ay_phy) (%)	Horizontal Detector Asymmetry (Ax_det) (%)	Vertical Detector Asymmetry (Ay_det) (%)	Horizontal Beam Current and Target Thickness Asymmetry (Ax_beam) (%)	Vertical Beam Current and Target Thickness Asymmetry (Ay_beam) (%)
10	0.381	5.693	0.231 ± 0.084	14.824 ± 0.086	1.298 ± 0.084	0.448 ± 0.088	0.523 ± 0.084	0.305 ± 0.088
4.5	0.813	5.693	0.240 ± 0.099	17.153 ± 0.100	1.288 ± 0.098	0.941 ± 0.103	0.519 ± 0.098	0.450 ± 0.103
1.6	1.676	5.693	0.311 ± 0.123	20.336 ± 0.125	1.421 ± 0.123	1.304 ± 0.130	0.650 ± 0.123	0.349 ± 0.130
0.45	1.001	5.693	0.220 ± 0.151	22.068 ± 0.153	1.384 ± 0.151	1.427 ± 0.161	1.199 ± 0.151	0.304 ± 0.161

- **Hall C Laser** at repetition rate **31 MHz**
- 1/2 Wave Plate state alternated between IN and OUT
- 0.45 um Runs performed at lower current due to rising vacuum in line

Silver – Thickness vs Vertical Mott Asymmetry



Thickness (um)	Vertical Asymmetry (%)	Uncertainty (%)
10	14.8237667	0.085681938
4.5	17.15260226	0.099979859
1.6	20.33637615	0.12494368
0.45	22.06779215	0.153333563

$$A_{ag}(x) = A_{ag0} / (1 + \alpha_{Ag} * x)$$

$$A_{ag0} = 21.9693 \pm 0.7282 \text{ (3.314\%)}$$

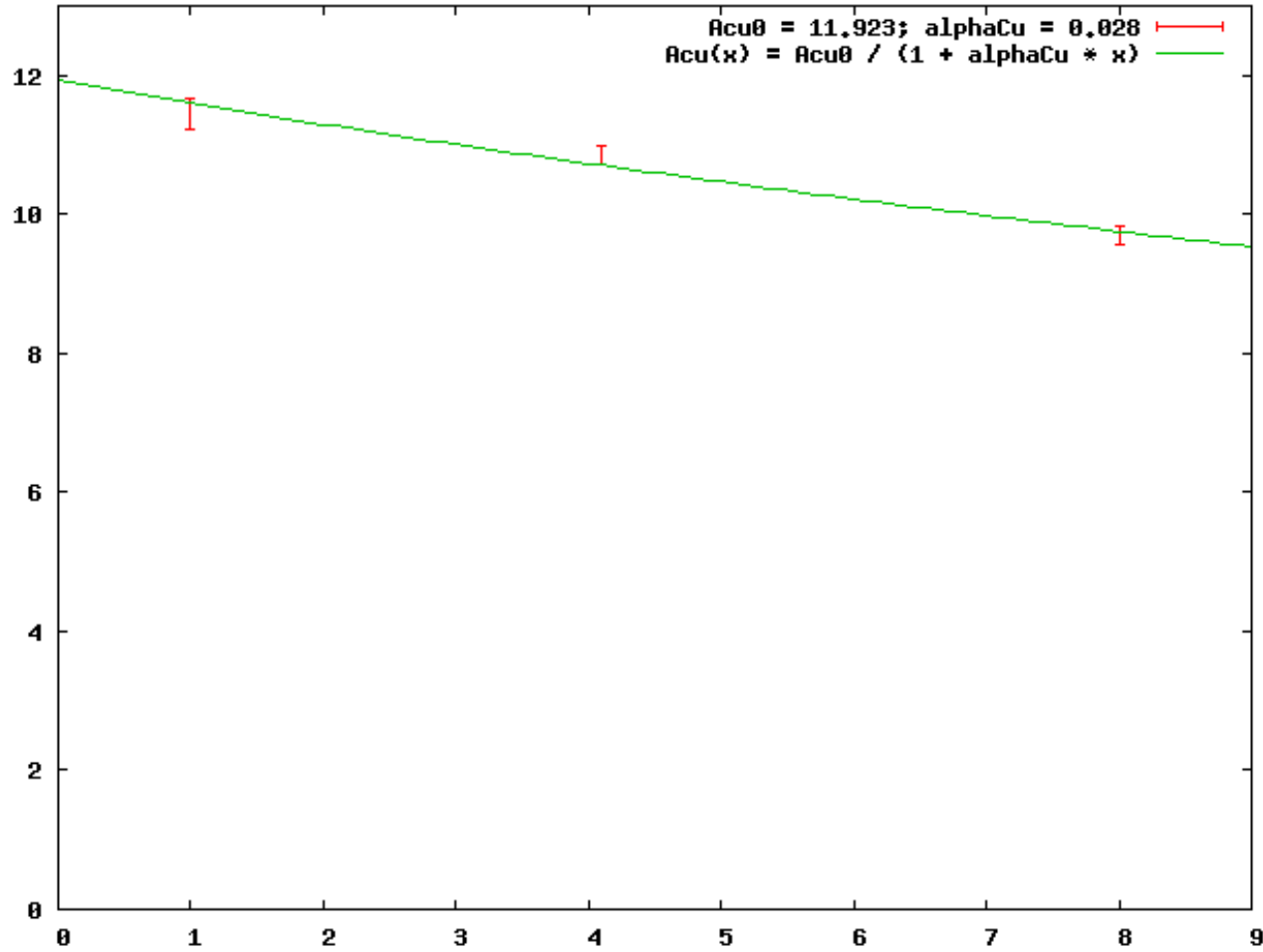
$$\alpha_{Ag} = 0.0514613 \pm 0.008212 \text{ (16.0\%)}$$

Copper – Asymmetries vs Target Thickness Data

Foil Thickness (um)	Beam Current (uA)	Beam Momentum (MeV/c)	Horizontal Mott Asymmetry (Ax_phy) (%)	Vertical Mott Asymmetry (Ay_phy) (%)	Horizontal Detector Asymmetry (Ax_det) (%)	Vertical Detector Asymmetry (Ay_det) (%)	Horizontal Beam Current and Target Thickness Asymmetry (Ax_beam) (%)	Vertical Beam Current and Target Thickness Asymmetry (Ay_beam) (%)
8	1.209	5.705	0.233 ± 0.118	9.698 ± 0.122	2.778 ± 0.118	1.603 ± 0.123	0.666 ± 0.118	0.202 ± 0.123
4.1	1.203	5.705	0.311 ± 0.137	10.854 ± 0.142	2.944 ± 0.137	0.726 ± 0.144	0.546 ± 0.137	0.175 ± 0.144
1	1.237	5.705	0.597 ± 0.209	11.434 ± 0.218	2.029 ± 0.209	0.606 ± 0.221	0.525 ± 0.209	0.598 ± 0.221

- **Hall C Laser** at repetition rate **31 MHz**
- 1/2 Wave Plate state alternated between IN and OUT

Copper – Thickness vs Vertical Mott Asymmetry



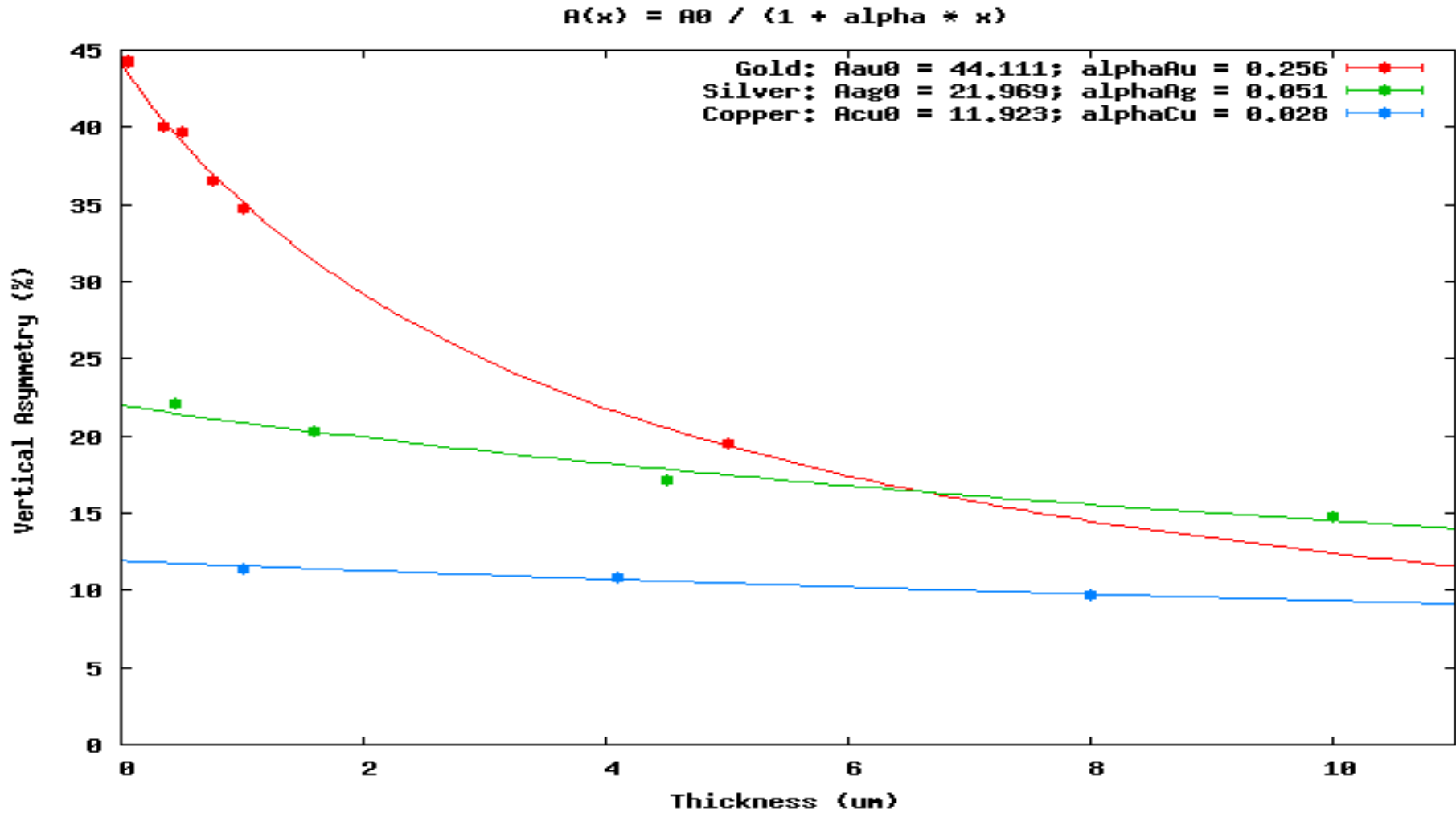
Thickness (um)	Vertical Asymmetry (%)	Uncertainty (%)
8	9.698059581	0.122086768
4.1	10.85364903	0.142157523
1	11.4344694	0.218349081

$$Acu(x) = Acu_0 / (1 + \alpha_{Cu} * x)$$

$$Acu_0 = 11.923 \pm 0.3135 \text{ (2.629\%)}$$

$$\alpha_{Cu} = 0.027756 \pm 0.00540 \text{ (19.5\%)}$$

Thickness vs Vertical Mott Asymmetry



Gold, Au, Z = 79

Silver, Ag, Z = 47

Copper, Cu, Z = 29