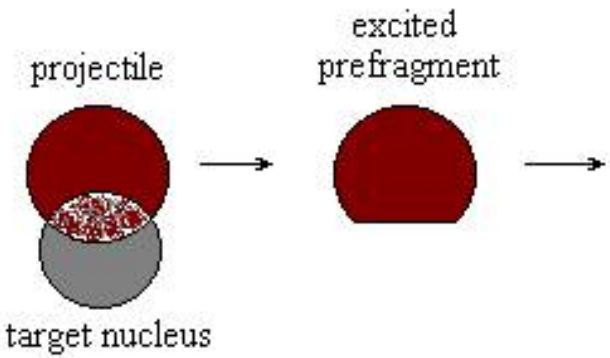
How does the primary target thickness influence orientation experiments ?

- Goldhaber width of the momentum distribution
- empirical knowledge from previous measurements
- some LISE++ calculations

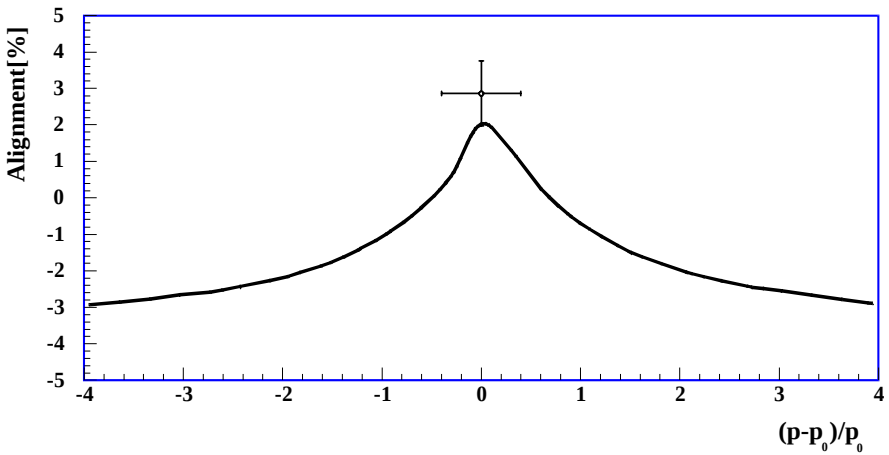
Goldhaber width of the momentum distribution

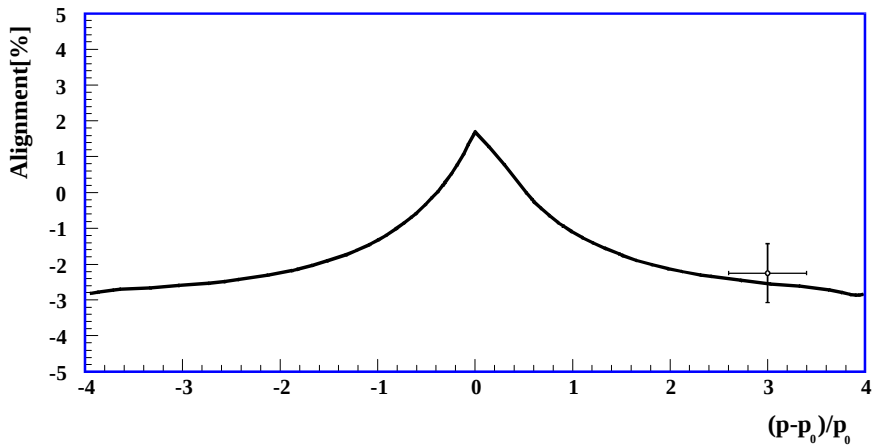
$$\sigma_{frag} = \sigma_{Fermi}\sqrt{A_f(A_p - A_f)/(A_p - 1)}$$



The momentum after the abrasion stage is not sharp but it exhibits certain momentum distribution, which is according to Goldhaber given by the Fermi motion of the remaining nucleons.

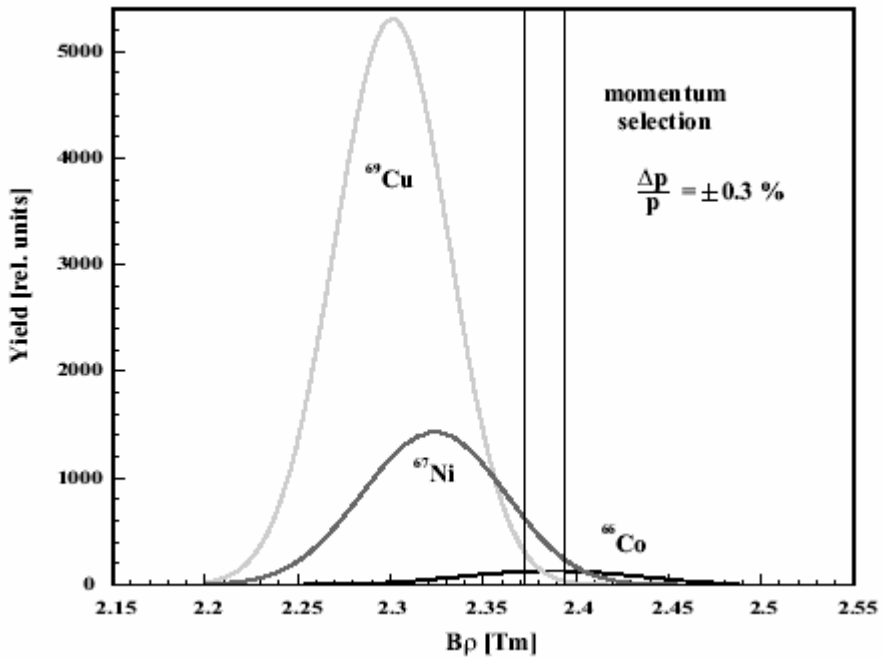
A.S. Goldhaber, Phys. Lett. B 53, 306 (1974)

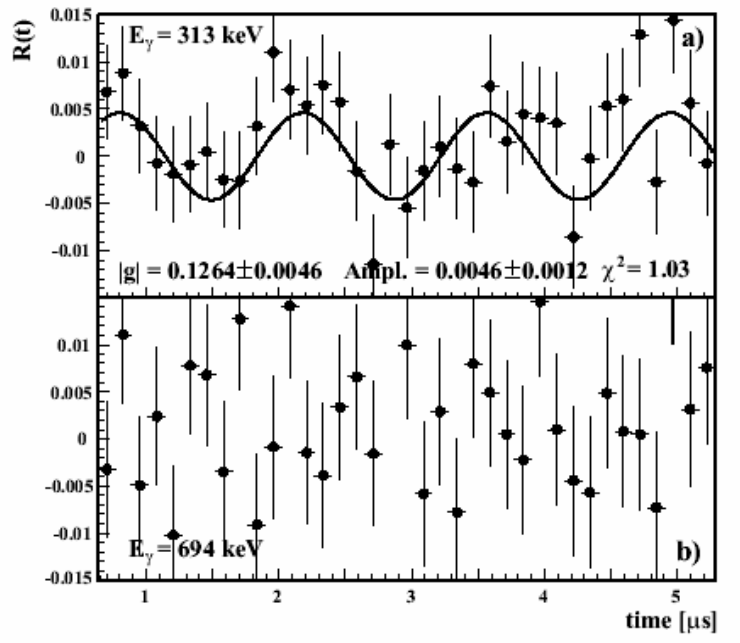




empirical knowledge from previous measurements

^{9}Be target
145 mg/cm^2



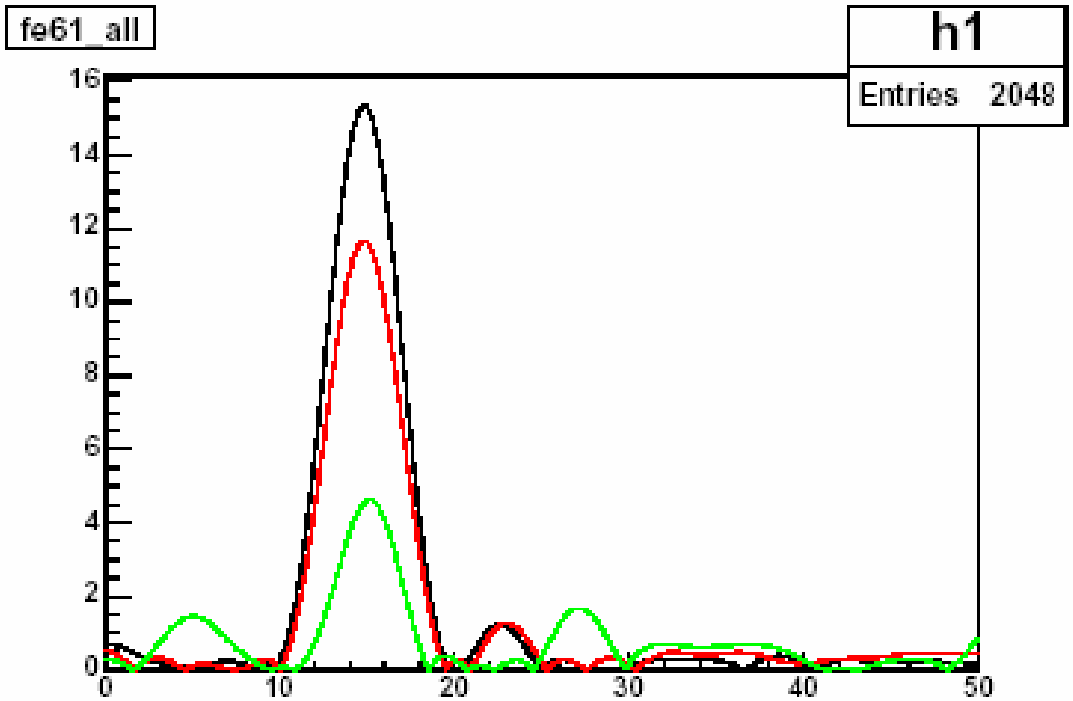


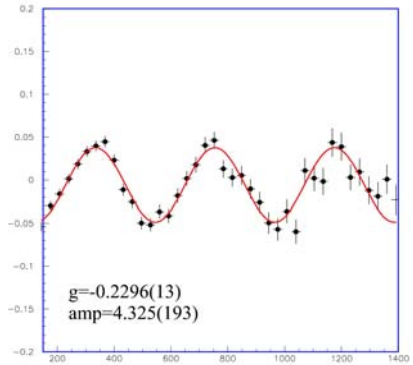
G. Georgiev *et al*, J. Phys. G **29**, 2993 (2002)

empirical knowledge from previous measurements

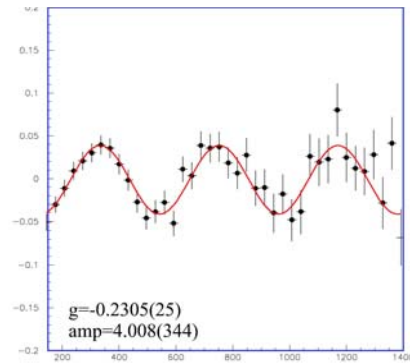
^{9}Be target

D_t = 97.6 mg/cm^2

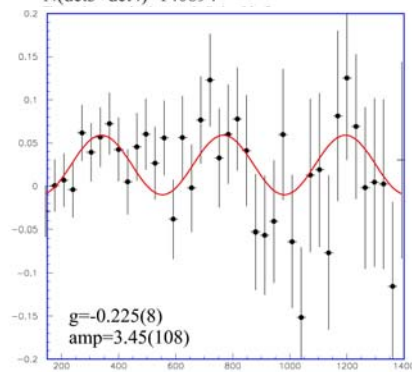




N(det1+det2)=362017
N(det3+det4)=449117



N(det1+det2)=114346
N(det3+det4)=140894



N(det1+det2)=11551
N(det3+det4)=14186

I. Matea *et al*, Phys. Rev. Lett. **93**, 142503 (2004)

How to understand this ?

$\sigma_{frag} \otimes D_t$?!

which results in linebroadening

Beam	Energy	Fragment	Target thickness	Mom.Center	Fwhm	%	
	[Mev/u]		[Mg/cm2]	[Brho]			
64ni	55	61fe	1	2.527	0.065	2.57	1
			97	**2.241**	**0.068**	**3.03**	**1.179666**
76ge	130	70ni	376	3.776	0.0914	2.42	1.652085
			1	4.218	0.0618	1.47	1
		67ni	376	3.591	0.08659	2.41	1.29924
76ge	61.4	67ni	145	2.266	0.0817	3.61	1.314454
			1	2.692	0.07384	2.74	1
46ti	500	43sc	1006	7.194	0.06508	0.90	1.037217
			1	7.409	0.06462	0.87	1
112sn	600	94pd	4000	6.384	0.07557	1.18	1.345522
			1	8.267	0.07273	0.88	1
			1000	7.842	0.07322	0.93	1.061298
			2000	7.392	0.07379	1.00	1.134671
			3000	6.91	0.07466	1.08	1.22813