Muon Collaboration

Proton de/dx Profile Calculations

Material Irradiation
Phone Meeting

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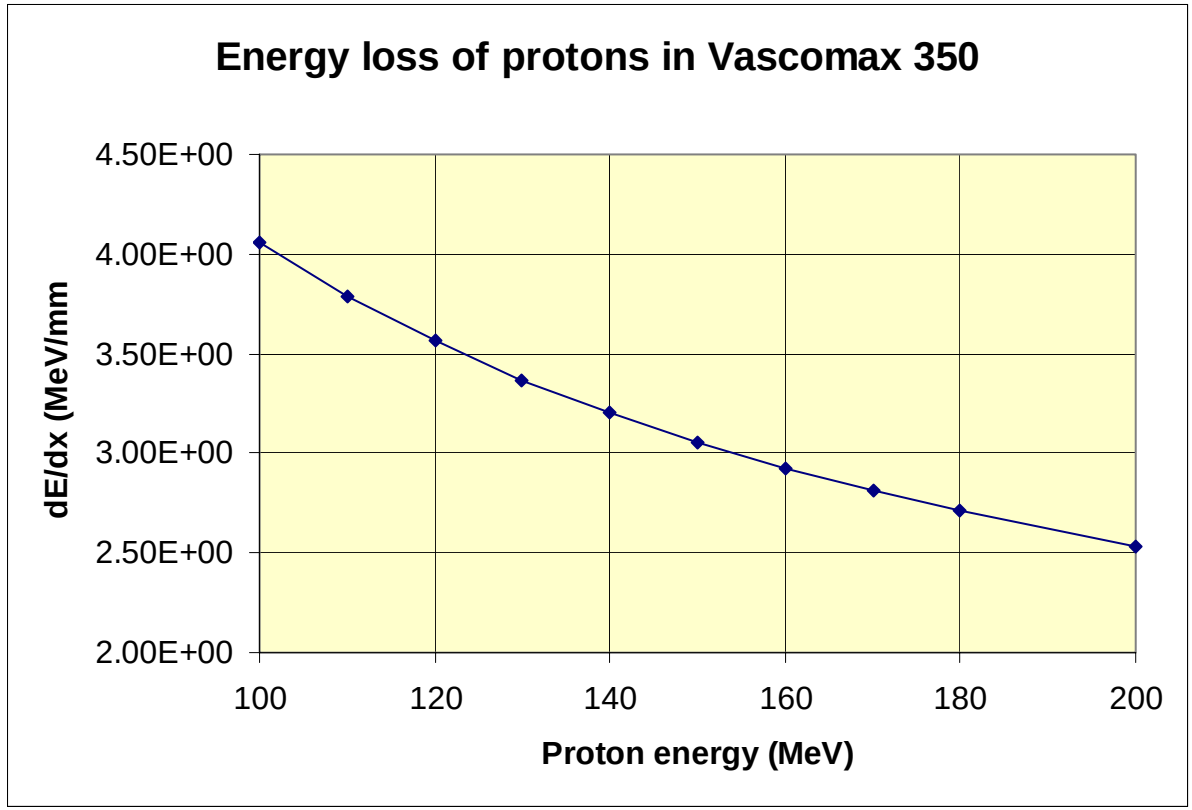
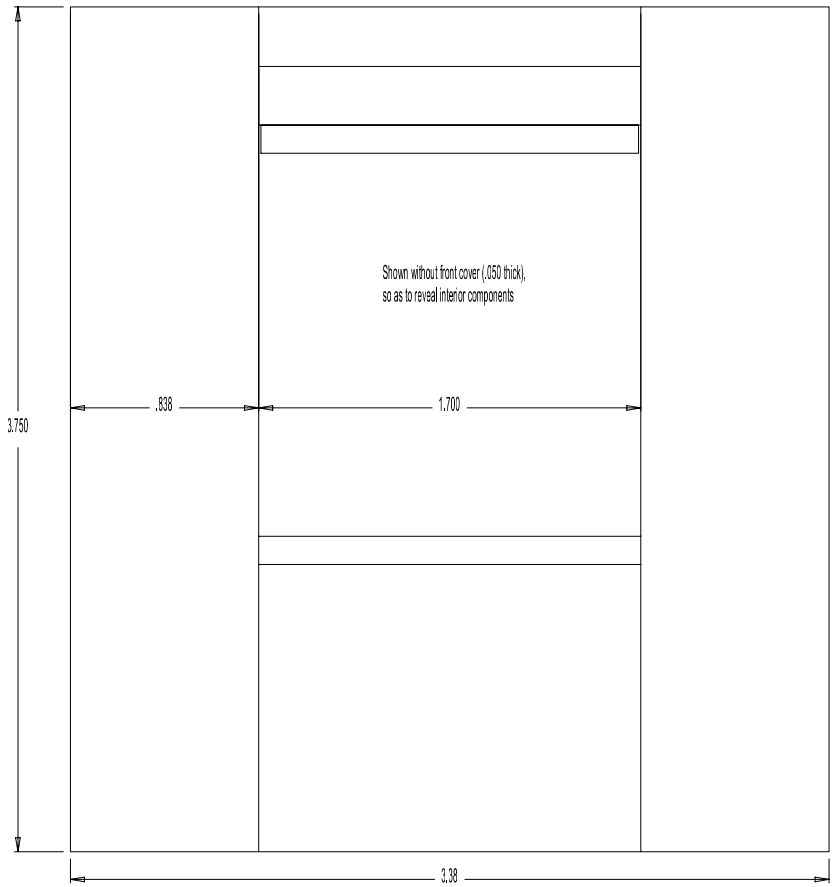
de/dx Calculations – Peter Thieberger

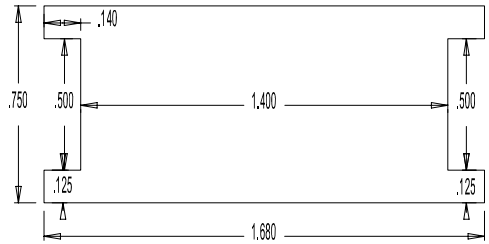
Calculations using TRIM

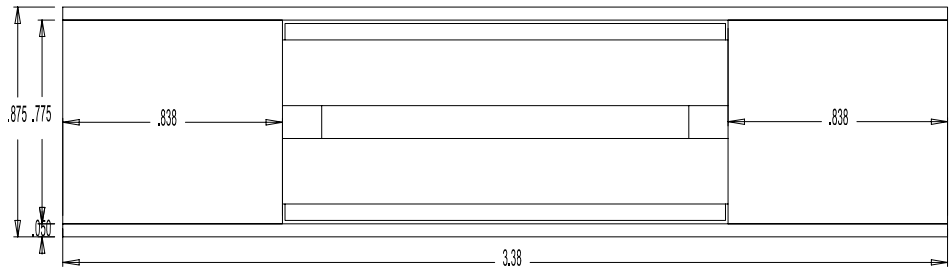
- Vascomax
- AlBeMet
- Ti-Al6-V4
- Carbon



Target Basket Dimensions







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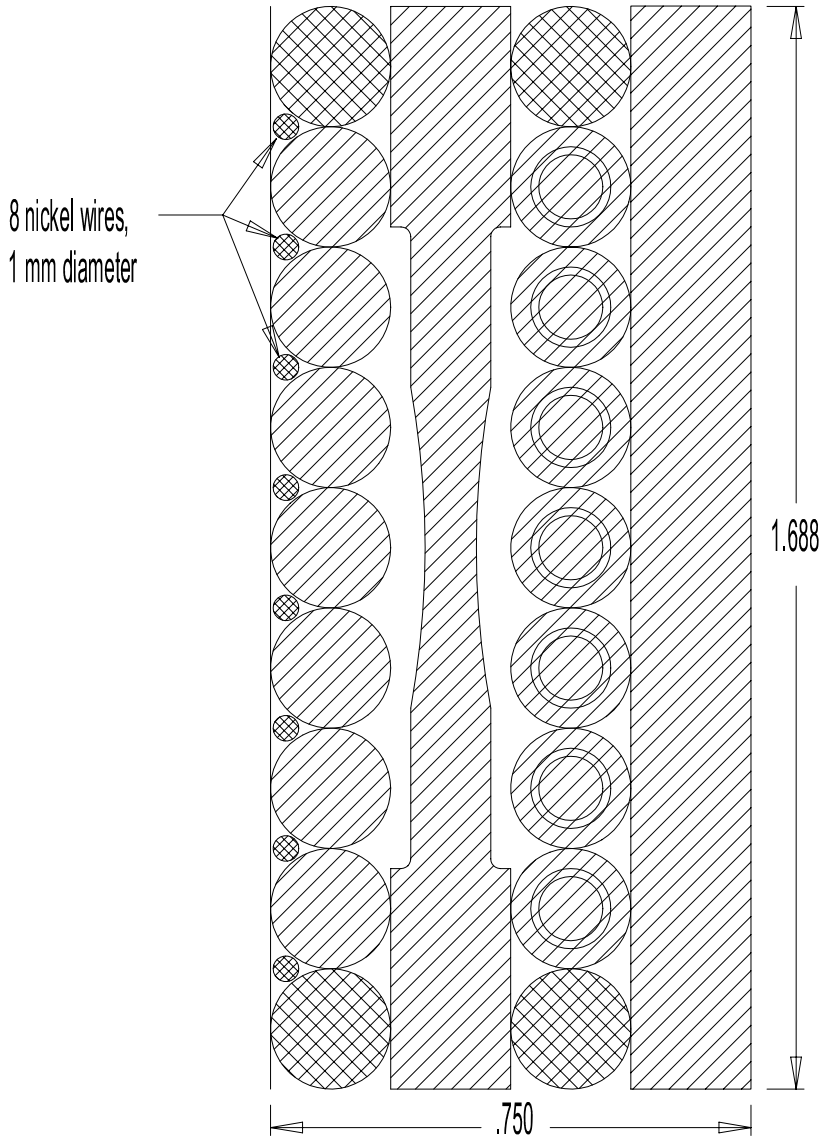
2001 Sample Layout



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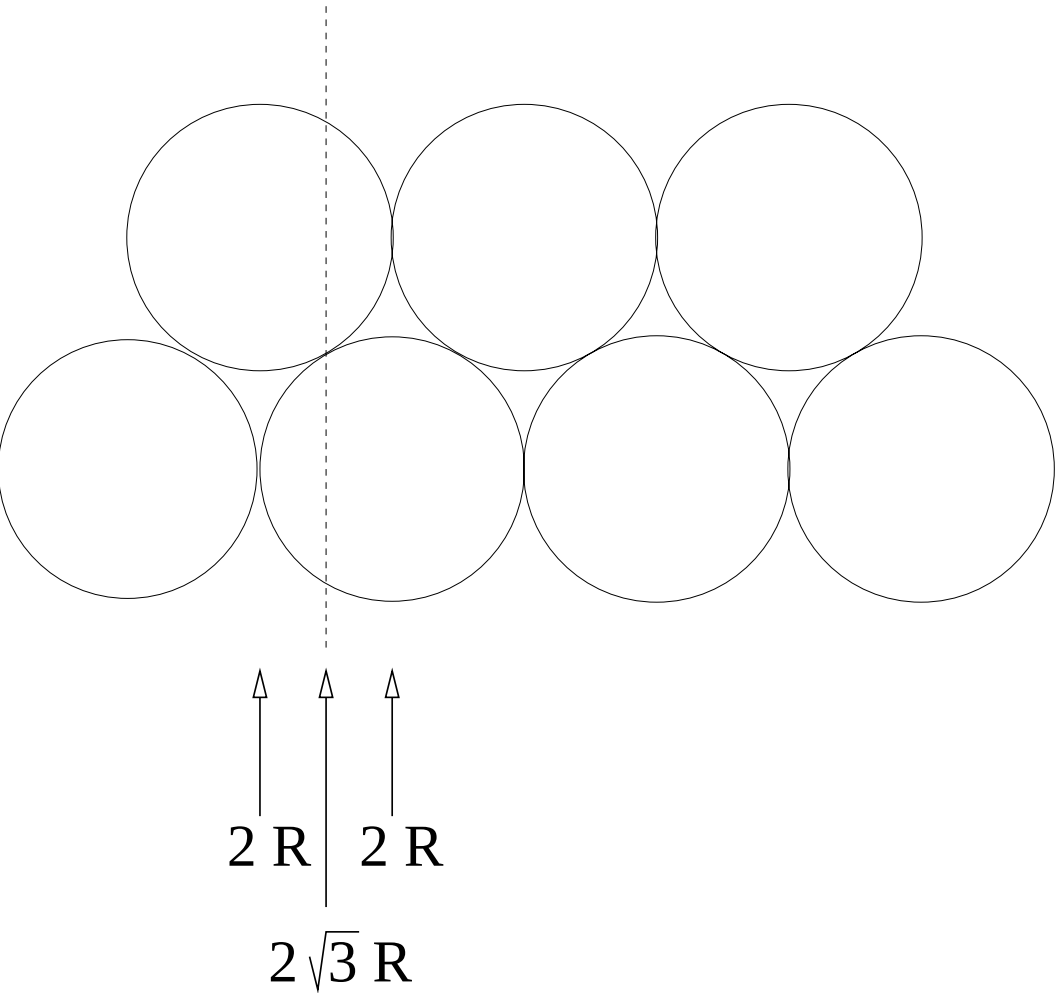
Ti Gum Metal Layout



For a double overlapping layer the target thickness ranges from 2 R to 2√3 R.

We need to arrange two double overlapping layers with one set shifted by ½ R. Then the total thickness of the 4 layer sample set will be:

$$(2 + 2\sqrt{3})\ R$$

= 12.5 mm for our samples.

Proton Beam de/dx Budget

Material Irradiation

Proton dE/dx Budget

Target Basket	Layer	Material	E_{in}	ΔE	E_{out}
1					
	1	Vascomax	192	11	181
	2	Vascomax	181	11	170
	3	Ti-A6-V4	170	7	163
	4	Ti-A6-V4	163	7	156
2					
	1-4	Ti Gum-Met.	156	24	132
3					
	1	C-C X-axis	132	4.5	127.5
	2	C-C X-axis	127.5	4.5	123
	3	C-C UV-axis	123	5	118
	4	C-C UV-axis	118	5	113
4					
	1	AlBeMet	113	4.5	108.5
	2	AlBeMet	127.5	5	103.5
	3	Graphite	103.5	5.5	98
	4	Graphite	98	6	92

Note: Except for Ti Gum Metal, each layer is assumed to be 4mm deep.