Permanent Magnets for ILC S4

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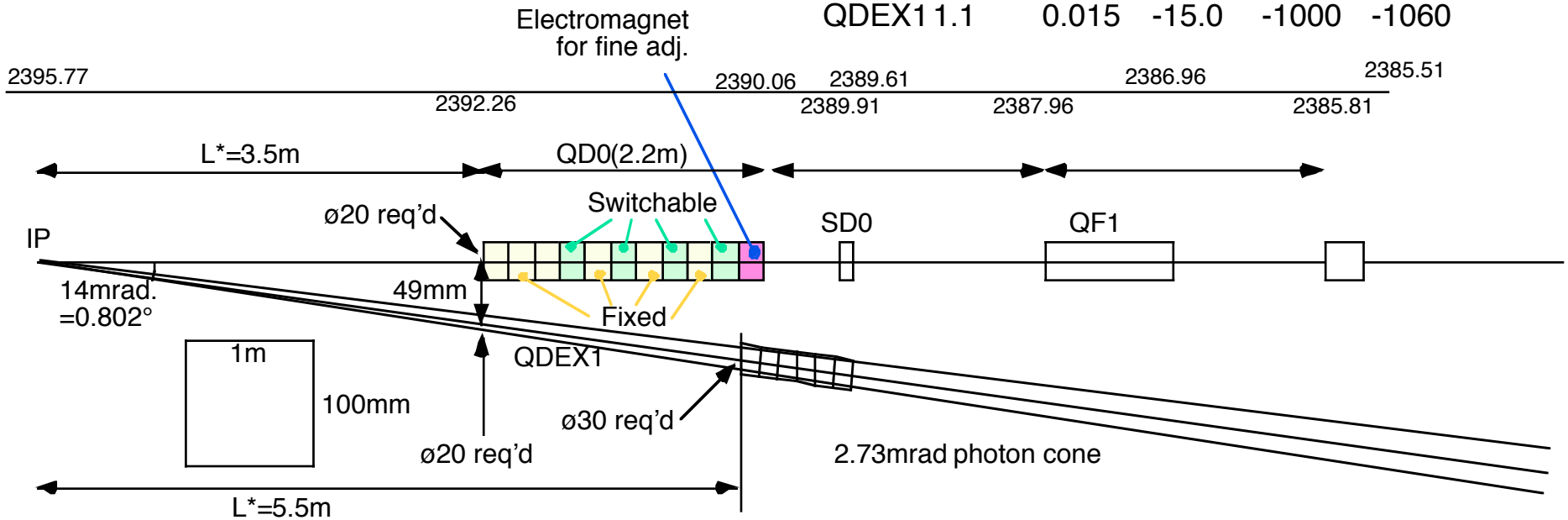
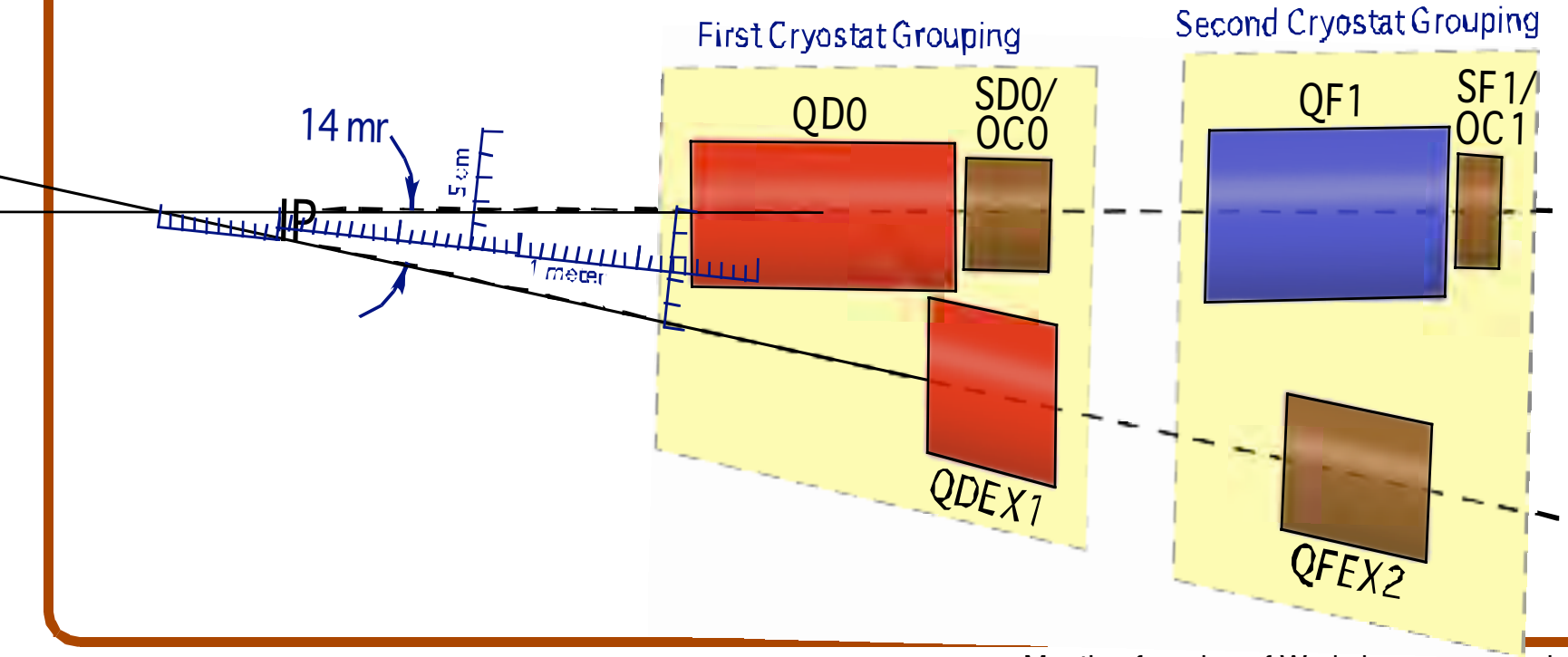
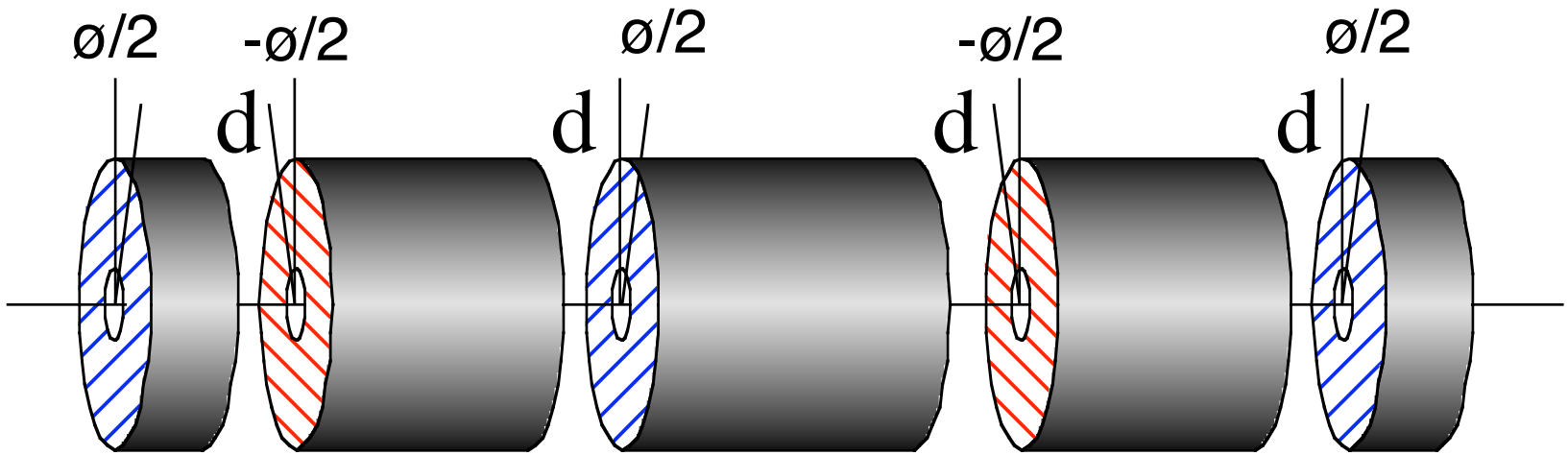
	Eff.L m	R m	kG	kG/m	GL kG
QF1	2.0	0.010	8.0	803	1605
QD0	2.2	0.010	-14.2	-1416	-3116
QDEX1	1.1	0.015	-15.0	-1000	-1060





Gluckstern's skewless variable PMQ



$$L = \sqrt{5}-1 \;:\; \sqrt{5}+1 \;:\; 4 \;:\; \sqrt{5}+1 \;:\; \sqrt{5}-1$$

$$M = R \bullet M2 \bullet R^{-2} \bullet M1 \bullet R^{2} \bullet M0 \bullet R^{-2} \bullet M1 \bullet R^{2} \bullet M2 \bullet R^{-1}$$

4x4 matrix: $M=\begin{pmatrix} Mxx & O^5 \\ O^5 & Myy \end{pmatrix}$ when d=0.

R.L. Gluckstern and R.F. Holsinger: Adjustable Strength REC Quadrupoles, IEEE Trans. Nucl. Sci., Vol. NS-30, NO. 4, August 1983, http://epaper.kek.jp/p83/PDF/PAC1983_3326.PDF

$$M0=\begin{pmatrix} \text{Cos}[\text{r0}] & \frac{\text{Sin}[\text{r0}]}{\sqrt{\text{k1}}} & 0 & 0 \\ -\sqrt{\text{k1}}\ \text{Sin}[\text{r0}] & \text{Cos}[\text{r0}] & 0 & 0 \\ 0 & 0 & \text{Cosh}[\text{r0}] & \frac{\text{Sinh}[\text{r0}]}{\sqrt{\text{k1}}} \\ 0 & 0 & \sqrt{\text{k1}}\ \text{Sinh}[\text{r0}] & \text{Cosh}[\text{r0}] \end{pmatrix}$$

$$\sqrt{\text{k1}}\ \text{L0} \to \text{r0}$$

$$k^2 = \frac{B'}{B\rho}$$

$$M = R \bullet M2 \bullet R^{-2} \bullet M1 \bullet R^{2} \bullet M0 \bullet R^{-2} \bullet M1 \bullet R^{2} \bullet M2 \bullet R^{-1}$$

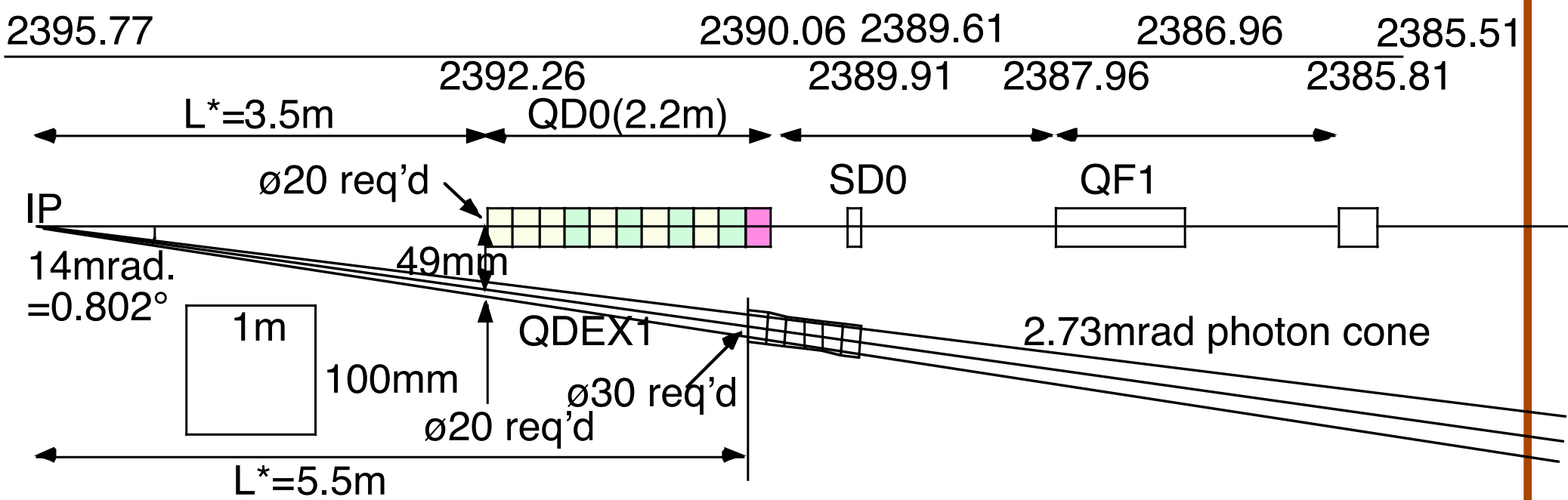
$$M = \begin{pmatrix} Mxx & Mxy \\ Myx & Myy \end{pmatrix}$$

$$Mxy =$$

$$\begin{pmatrix} \left(\left(-\frac{3}{16}-\frac{\sqrt{5}}{12}\right)e+O[e]^3\right)\text{r0}^6+O[\text{r0}]^7 & O[\text{r0}]^7 \\ \left(\left(-\frac{11\sqrt{\text{k1}}}{96}-\frac{5\sqrt{5}\sqrt{\text{k1}}}{96}\right)e+O[e]^3\right)\text{r0}^5+O[\text{r0}]^7 & \left(\left(-\frac{3}{16}-\frac{\sqrt{5}}{12}\right)e+O[e]^3\right)\text{r0}^6+O[\text{r0}]^7 \end{pmatrix}$$

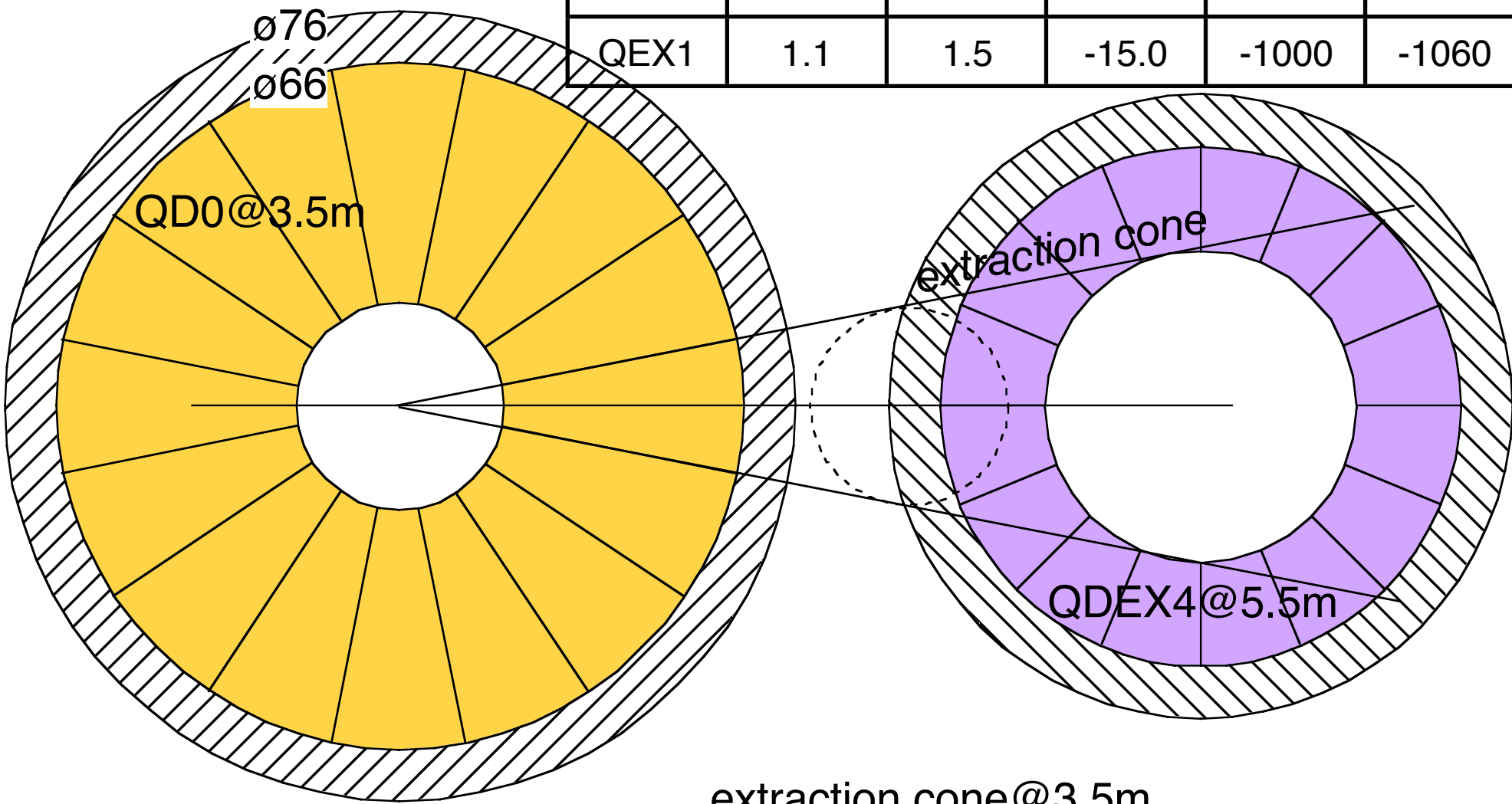
Single Ring Train Configuration

	Eff.L [m]	R [cm]	kG	kG/m	GL [kG]
QF1	2.0	1	8	803	1605
QD0	2.2	1	-14.2	-1416	-3116
QEX1	1.1	1.5	-15.0	-1000	-1060



14mr option

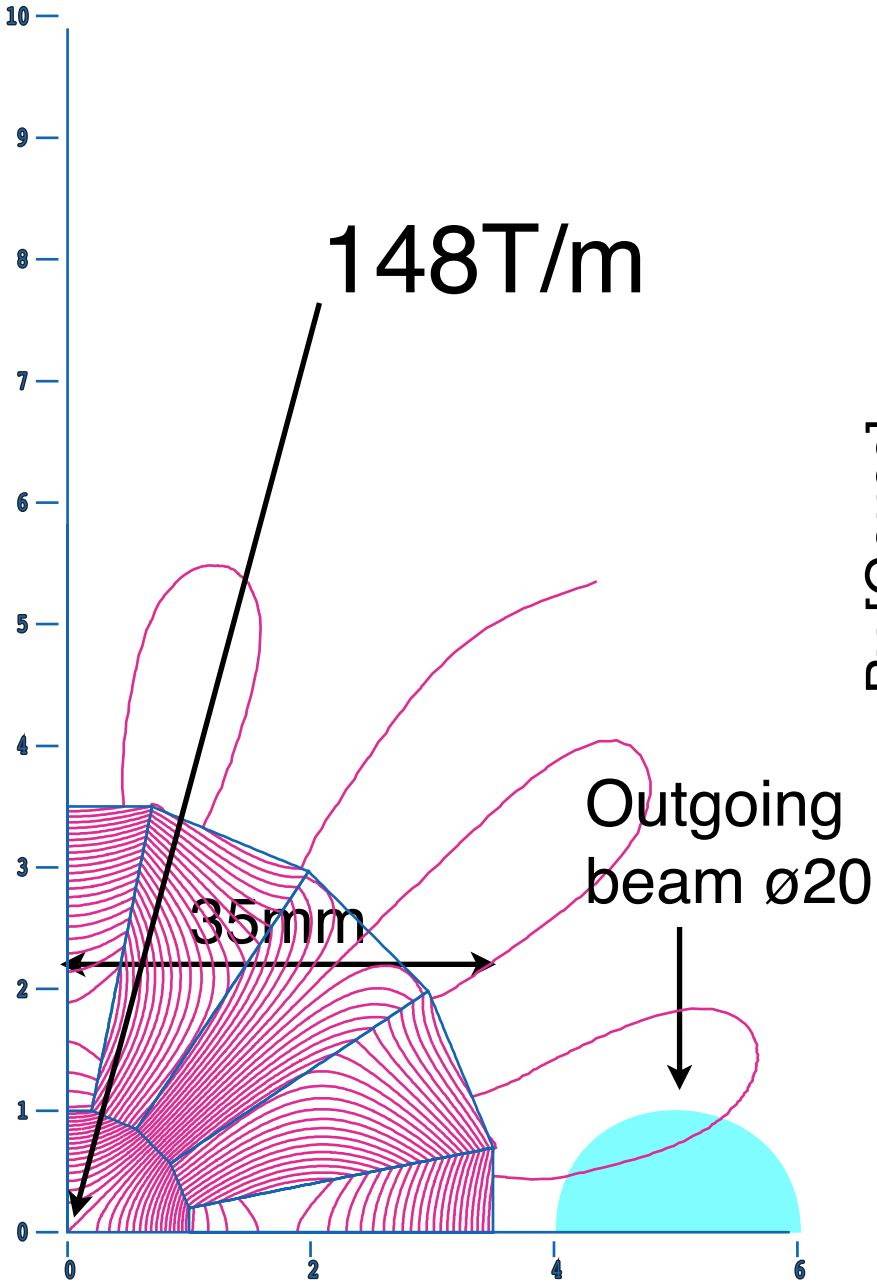
	Eff.L [m]	R [cm]	kG	kG/m	GL [kG]
QF1	2.0	1	8	803	1605
QD0	2.2	1	-14.2	-1416	-3116
QEX1	1.1	1.5	-15.0	-1000	-1060

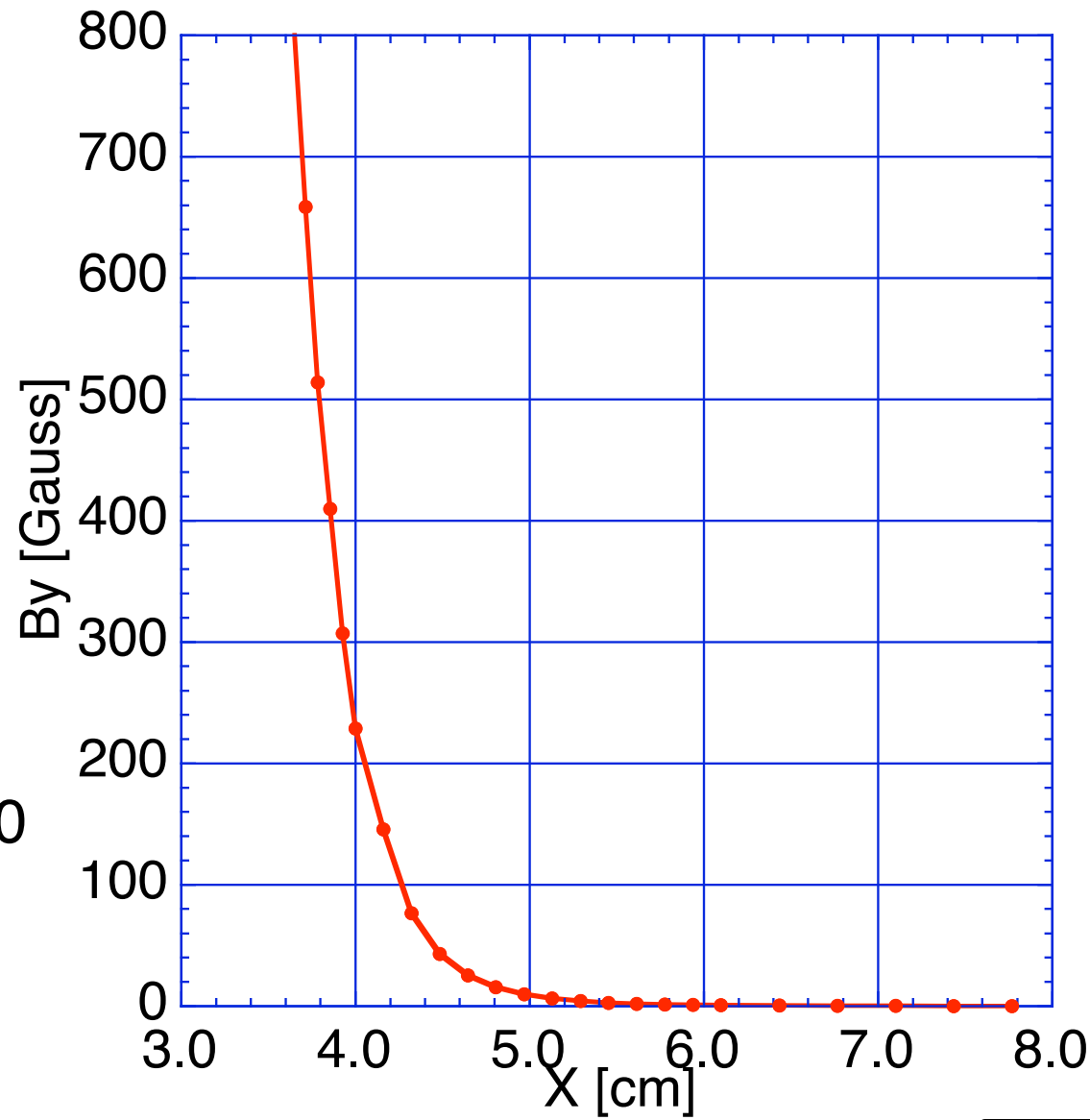


extraction cone@3.5m

= 3.5 x 14m rad.

Alternative configuration: A Simple PMQ





Alternative configuration: A Simple PMQ