

Trajectories of particles grazing the TCDQ at 10σ

LHC-tune: $Q_H = 64.28$
 $Q_V = 59.31$

Phase advance TCDQ-entr. - Q5.L6-centre = 3.787758° 0.066108856 rad

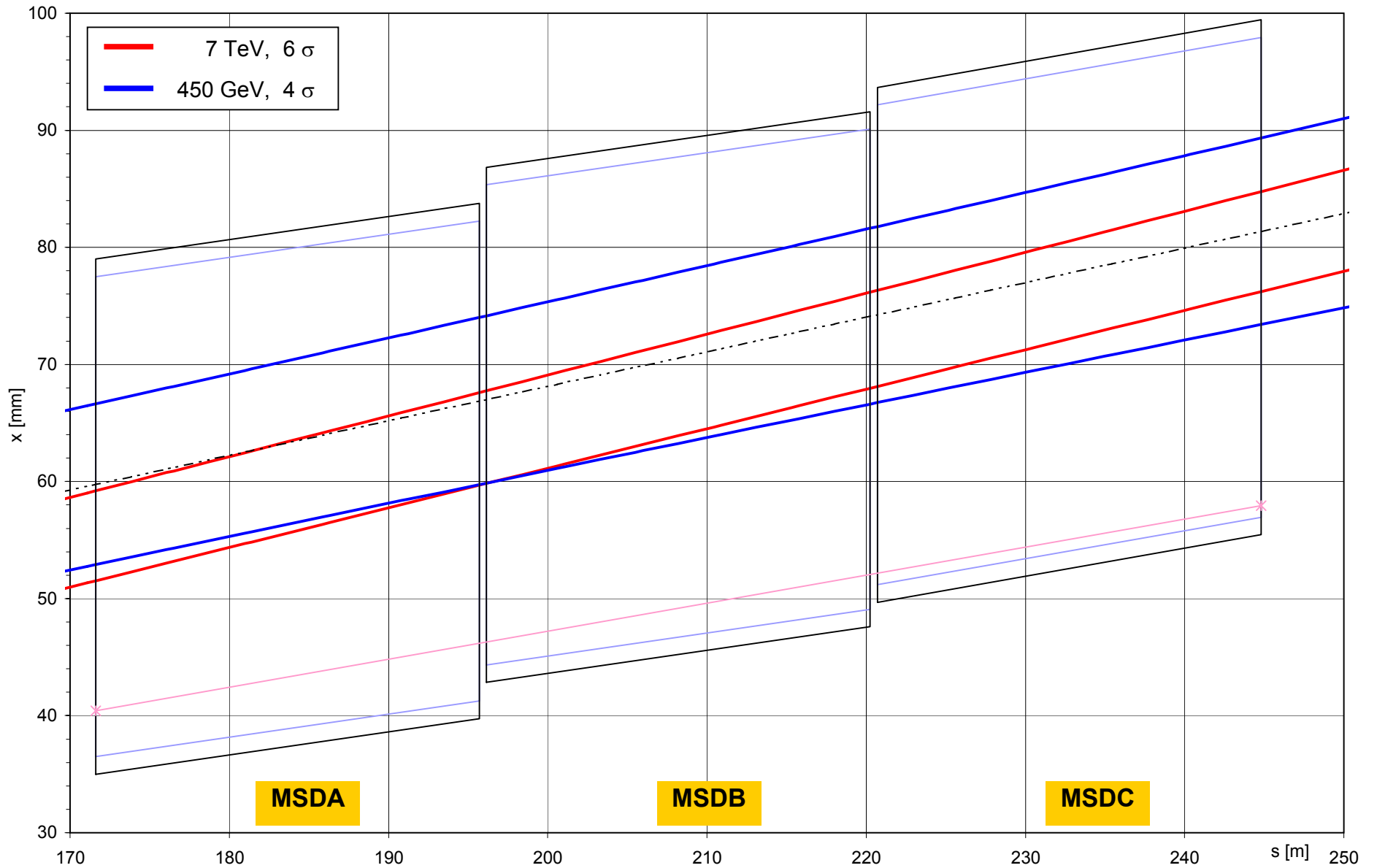
Transfermatrix TCDQ-entr. - Q5.L6-centre: $TM = \begin{vmatrix} 0.961730159 & 36.97711671 \\ -0.00385093 & 0.891730079 \end{vmatrix}$

TCDQ aperture limitation (10σ) at **450 GeV:** 23.96626 mm
7 TeV: 6.076557 mm

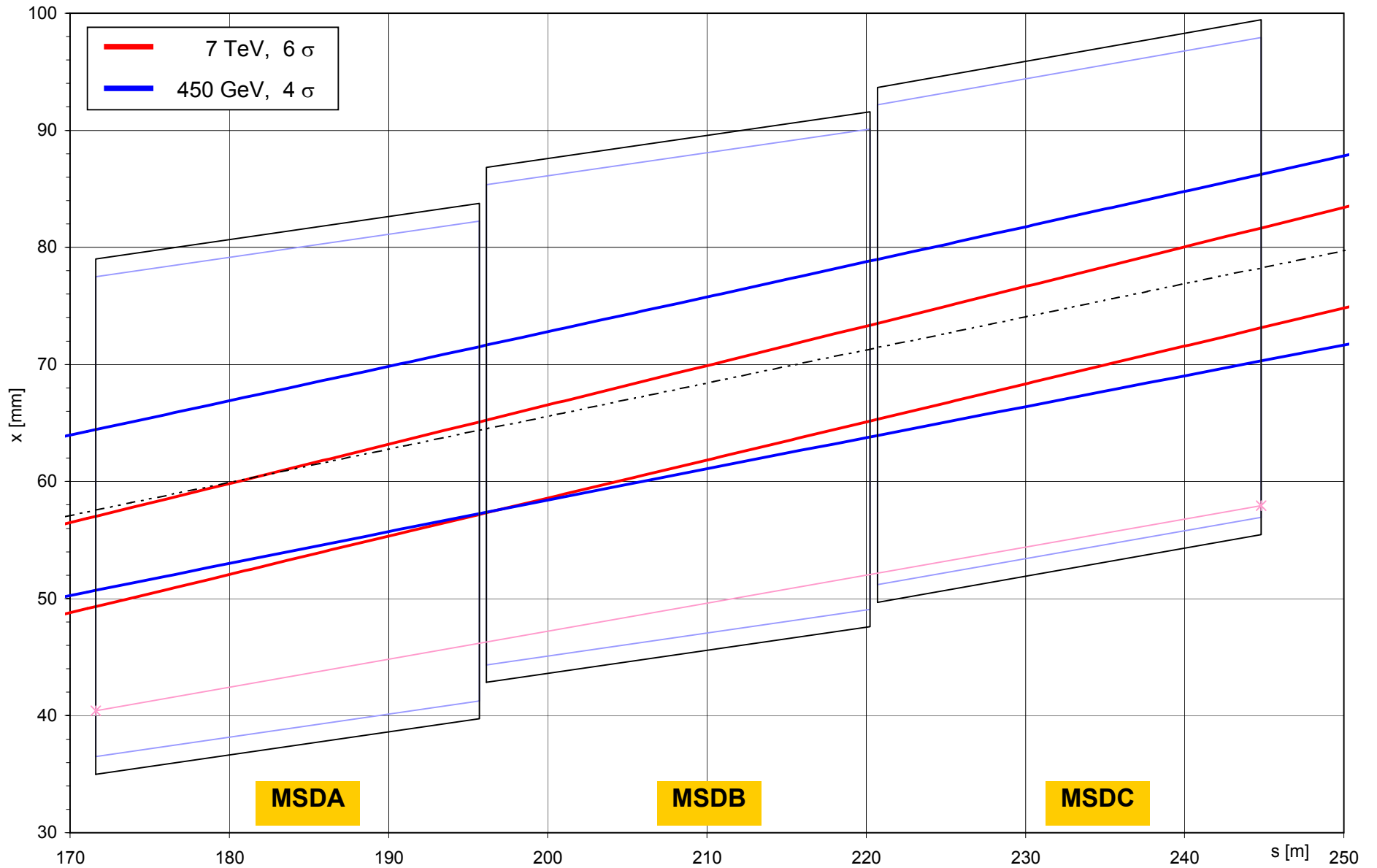
		450 GeV				7 TeV	
Q5.L6-c	x =	-1.98147	-2	2	1.981465	-1.981465467	2
	x' =	-0.02177	0	0	0.021772	-0.021771579	0
Q5.L6-ex	x =	-2	-1.98147	1.98147	2	-2	1.981465477
	x' =	0	0.02177	-0.02177	0	0	-0.021771579
TCDQ-entr	x =	23.96626	23.9663	23.9663	23.96626	6.076556596	6.076556596
	x' =	0.07487	0.07402	0.06671	0.065853	0.022348254	0.013331653
Q5.L6-c after 1 turn	x =	25.81756	25.7861	25.5156	25.48415	6.670381732	6.33697383
	x' =	-0.02553	-0.02629	-0.03281	-0.03357	-0.003471784	-0.011512158
Dump	x =	294.9468	293.795	283.9044	282.7526	329.0439112	316.8496885

k [mrad] = 0.271581226943836

Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.28$, CO in Q5.L6 = -2mm)



Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.28$, CO in Q5.L6 = +2mm)



Trajectories of particles grazing the TCDQ at 10σ

LHC-tune: $Q_H = 64.03$
 $Q_V = 59.31$

Phase advance TCDQ-entr. - Q5.L6-centre = -86.21224° -1.50468747 rad

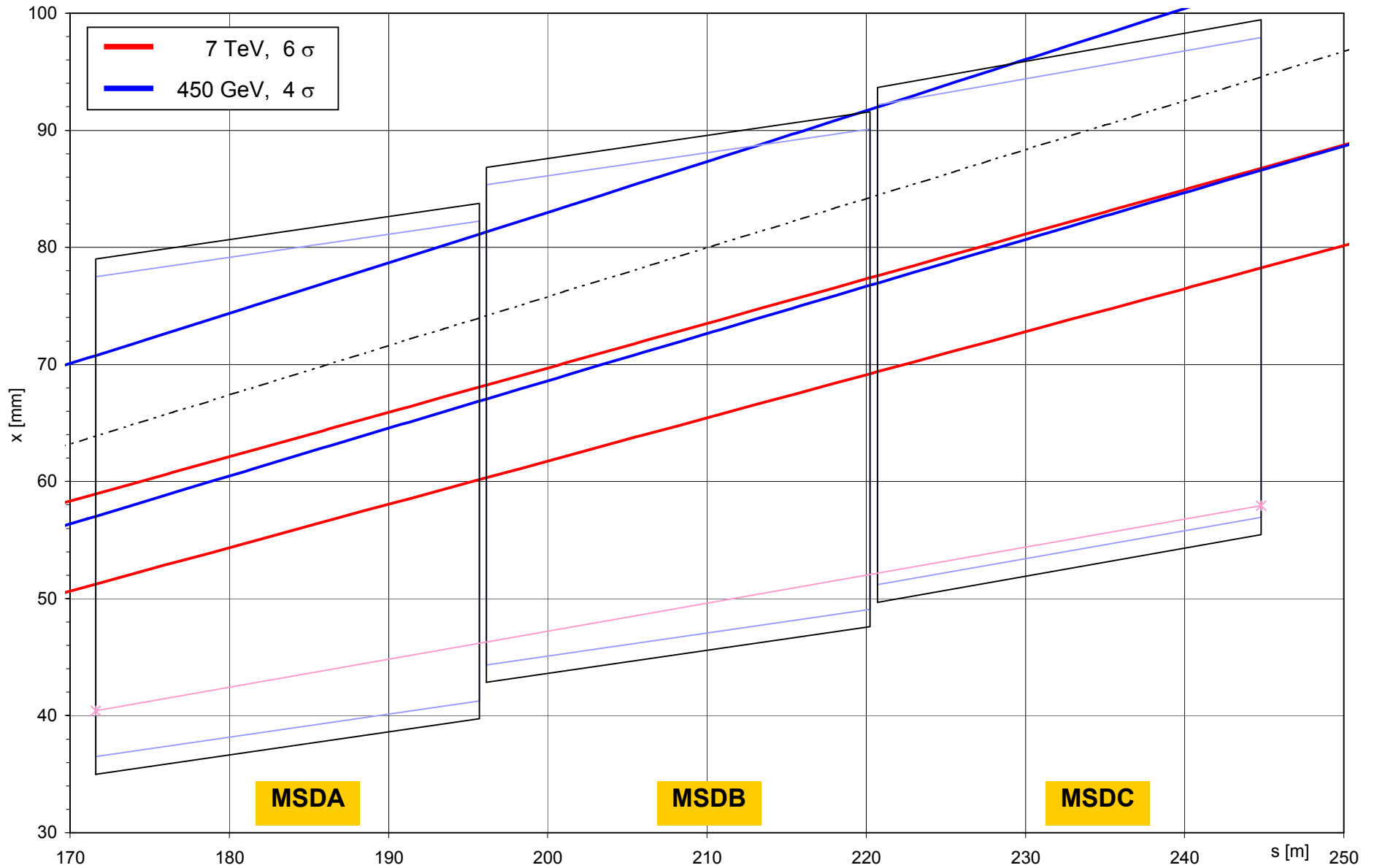
Transfermatrix TCDQ-entr. - Q5.L6-centre: $TM = \begin{vmatrix} 1.802505439 & -558.5217324 \\ -2.96376E-05 & 0.563966816 \end{vmatrix}$

TCDQ aperture limitation (10σ) at **450 GeV:** 23.96626 mm
7 TeV: 6.076557 mm

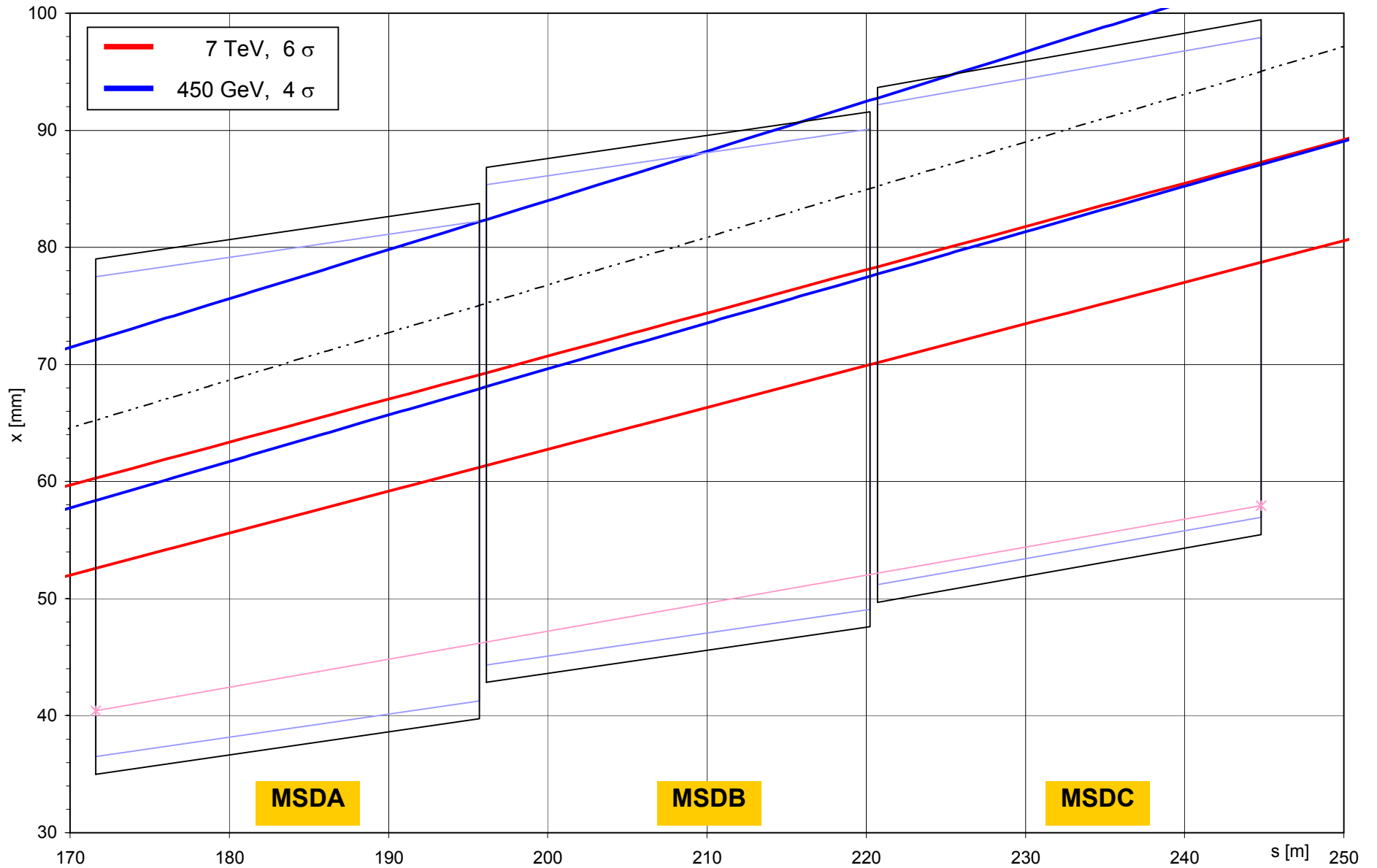
		450 GeV				7 TeV	
Q5.L6-c	x =	-1.98147	-2	2	1.981465	-1.981465467	2
	x' =	-0.02177	0	0	0.021772	-0.021771579	0
Q5.L6-ex	x =	-2	-1.98147	1.98147	2	-2	1.981465477
	x' =	0	0.02177	-0.02177	0	0	-0.021771579
TCDQ-entr	x =	23.96626	23.9663	23.9663	23.96626	6.076556596	6.076556596
	x' =	0.07487	0.07402	0.06671	0.065853	0.022348254	0.013331653
Q5.L6-c after 1 turn	x =	1.382782	1.85845	5.94308	6.418749	-1.528959174	3.507008361
	x' =	0.041514	0.04103	0.03691	0.036429	0.012423579	0.007338515
Dump	x =	397.5004	396.756	390.3639	389.6195	353.4361329	345.5552382

k [mrad] = 0.271581226943836

Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.03$, CO in Q5.L6 = -2mm)



Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.03$, CO in Q5.L6 = +2mm)



Trajectories of particles grazing the TCDQ at 10σ

LHC-tune: $Q_H = 64.53$
 $Q_V = 59.31$

Phase advance TCDQ-entr. - Q5.L6-centre = 93.78776 ° 1.636905183 rad

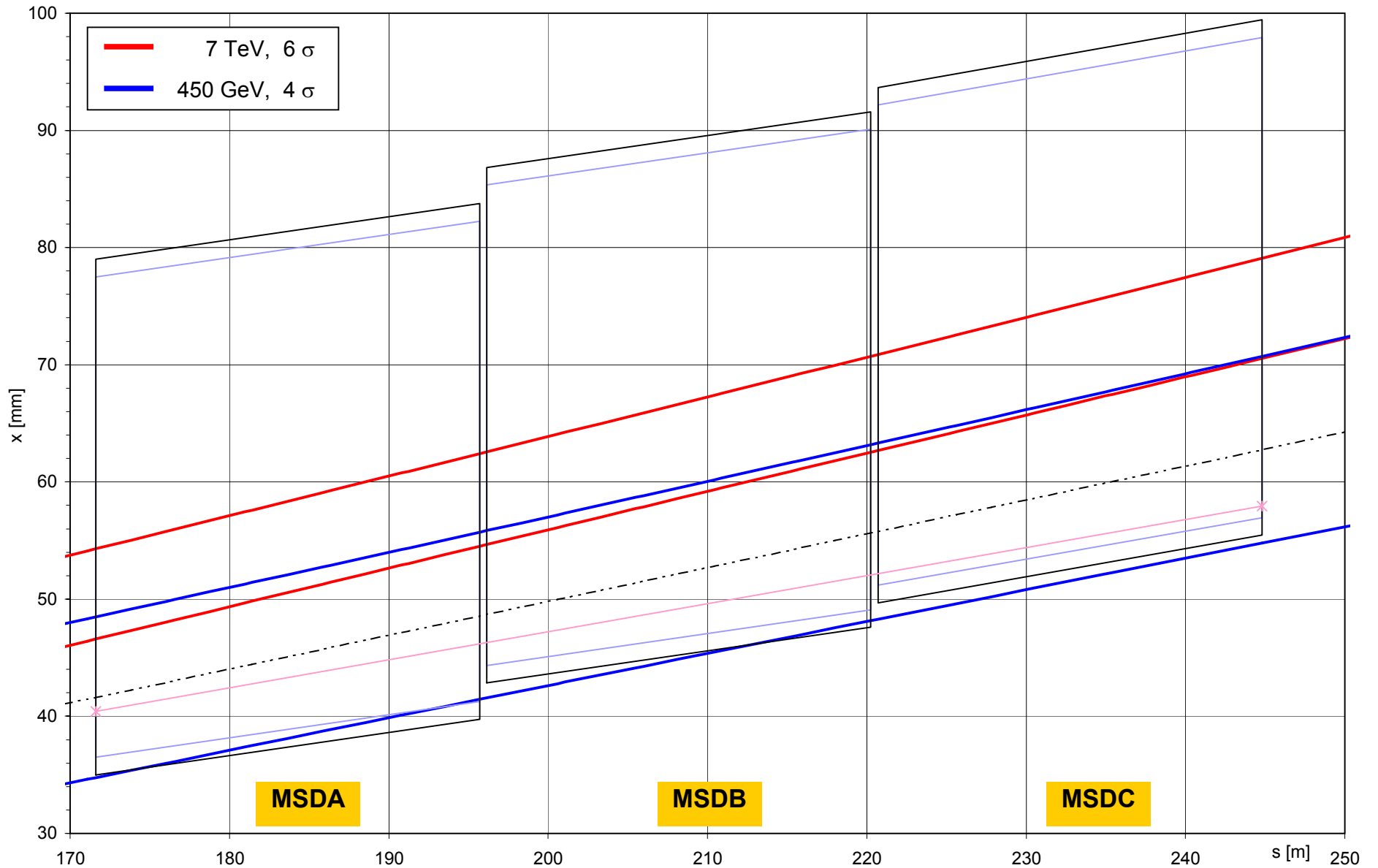
Transfermatrix TCDQ-entr. - Q5.L6-centre: $TM = \begin{vmatrix} -1.802505439 & 558.5217324 \\ 2.96376E-05 & -0.563966816 \end{vmatrix}$

TCDQ aperture limitation (10σ) at **450 GeV:** 23.96626 mm
7 TeV: 6.076557 mm

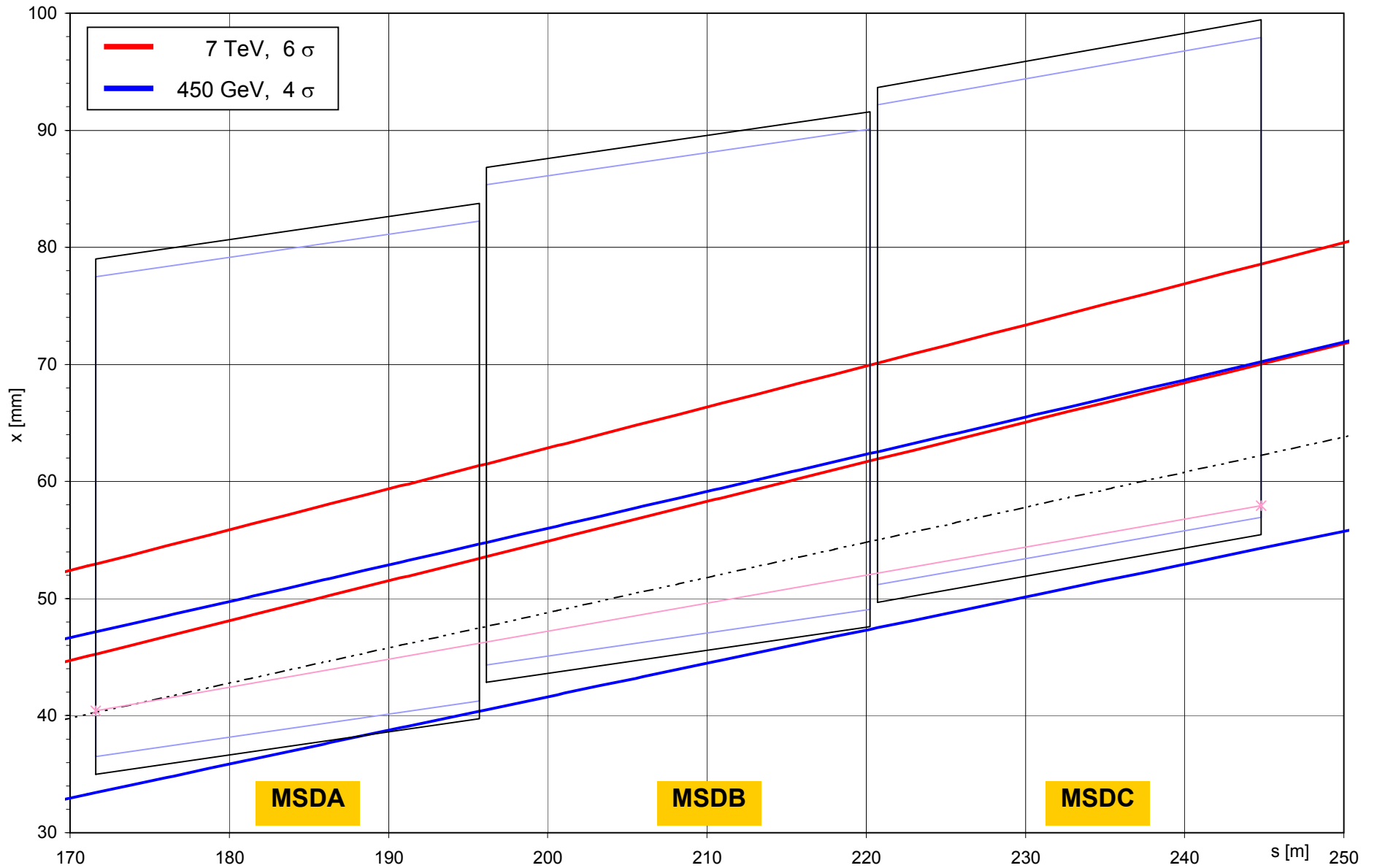
		450 GeV				7 TeV	
Q5.L6-c	x =	-1.98147	-2	2	1.981465	-1.981465467	2
	x' =	-0.02177	0	0	0.021772	-0.021771579	0
Q5.L6-ex	x =	-2	-1.98147	1.98147	2	-2	1.981465477
	x' =	0	0.02177	-0.02177	0	0	-0.021771579
TCDQ-enti	x =	23.96626	23.9663	23.9663	23.96626	6.076556596	6.076556596
	x' =	0.07487	0.07402	0.06671	0.065853	0.022348254	0.013331653
Q5.L6-c after 1 turn	x =	-1.38278	-1.85845	-5.94308	-6.41875	1.528959174	-3.507008361
	x' =	-0.04151	-0.04103	-0.03691	-0.03643	-0.012423579	-0.007338515
Dump	x =	271.5566	272.301	278.6931	279.4375	315.6208424	323.5017371

k [mrad] = 0.271581226943836

Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.53$, CO in Q5.L6 = -2mm)



Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.53$, CO in Q5.L6 = +2mm)



Trajectories of particles grazing the TCDQ at 10σ

LHC-tune: $Q_H = 64.18313$
 $Q_V = 59.31$

Phase advance TCDQ-entr. - Q5.L6-centre = -31.08404° -0.542518882 rad

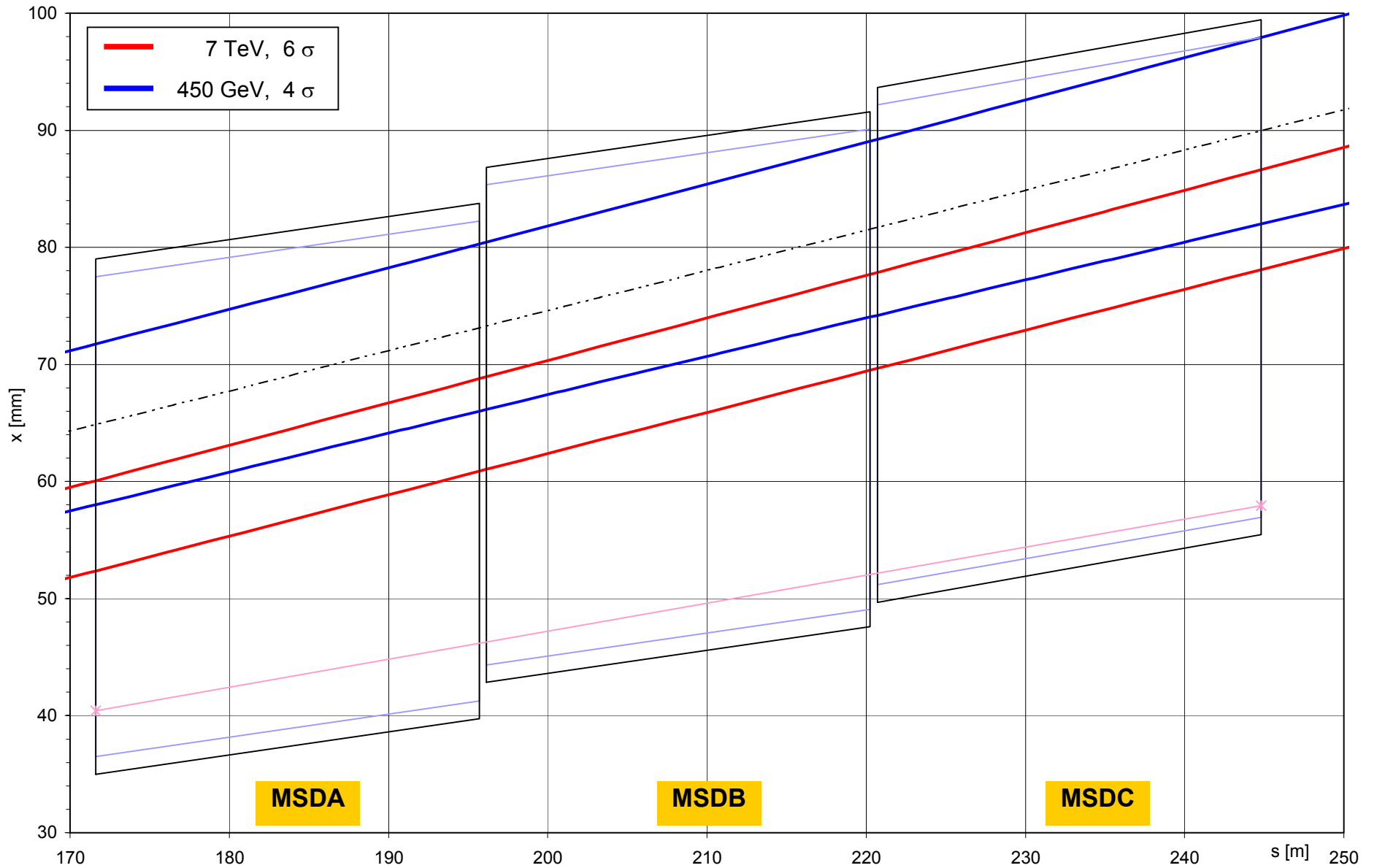
Transfermatrix TCDQ-entr. - Q5.L6-centre: $TM = \begin{vmatrix} 1.819603849 & -288.9931554 \\ -0.003176377 & 1.054048713 \end{vmatrix}$

TCDQ aperture limitation (10σ) at **450 GeV:** 23.96626 mm
7 TeV: 6.076557 mm

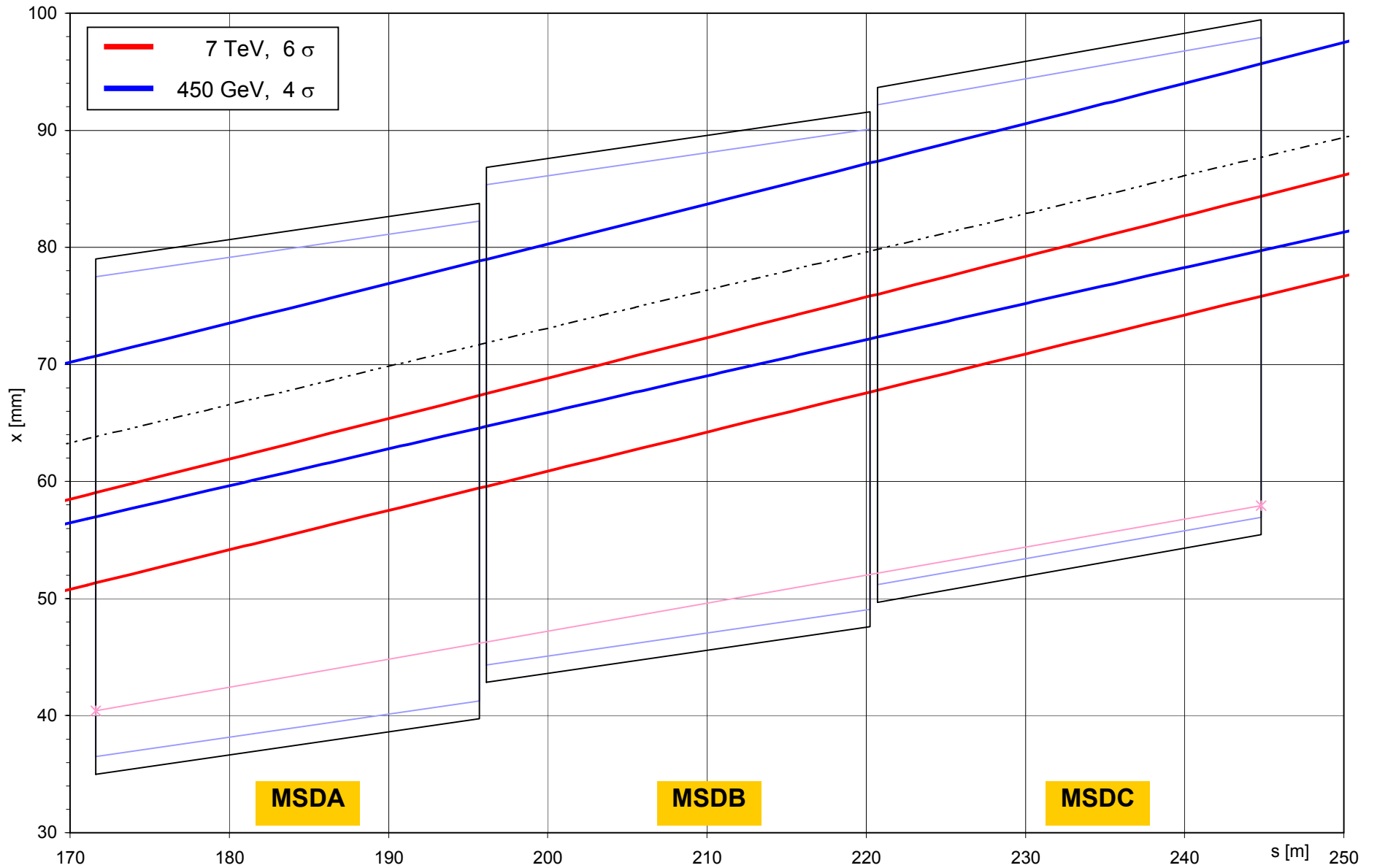
		450 GeV				7 TeV	
Q5.L6-c	x =	-1.98147	-2	2	1.981465	-1.981465467	2
	x' =	-0.02177	0	0	0.021772	-0.021771579	0
Q5.L6-ex	x =	-2	-1.98147	1.98147	2	-2	1.981465477
	x' =	0	0.02177	-0.02177	0	0	-0.021771579
TCDQ-enti	x =	23.96626	23.9663	23.9663	23.96626	6.076556596	6.076556596
	x' =	0.07487	0.07402	0.06671	0.065853	0.022348254	0.013331653
Q5.L6-c after 1 turn	x =	21.97218	22.2183	24.3318	24.57791	4.598433358	7.204169293
	x' =	0.002791	0.00189	-0.00582	-0.00671	0.004254716	-0.00524922
Dump	x =	338.058	336.6875	324.9182	323.5476	340.8390559	326.328669

k [mrad] = 0.271581226943836

Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.1831$, CO in Q5.L6 = -2mm)



Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.1831$, CO in Q5.L6 = +2mm)



Trajectories of particles grazing the TCDQ at 10σ

LHC-tune: $Q_H = 64.3915$
 $Q_V = 59.31$

Phase advance TCDQ-entr. - Q5.L6-centre = 43.92614 ° 0.766655819 rad

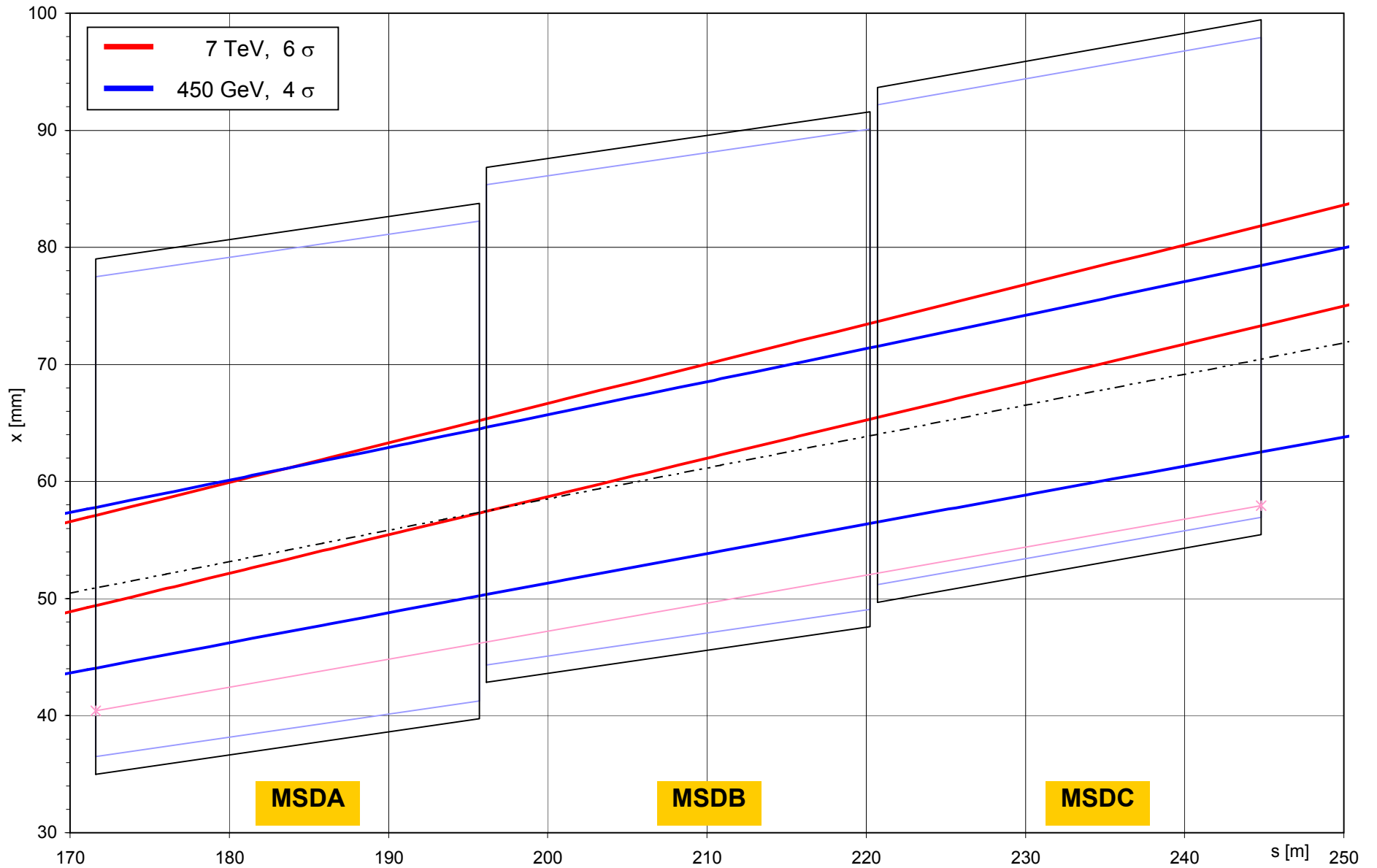
Transfermatrix TCDQ-entr. - Q5.L6-centre: $TM = \begin{vmatrix} -0.426726963 & 388.3118023 \\ -0.002924891 & 0.318165195 \end{vmatrix}$

TCDQ aperture limitation (10σ) at **450 GeV:** 23.96626 mm
7 TeV: 6.076557 mm

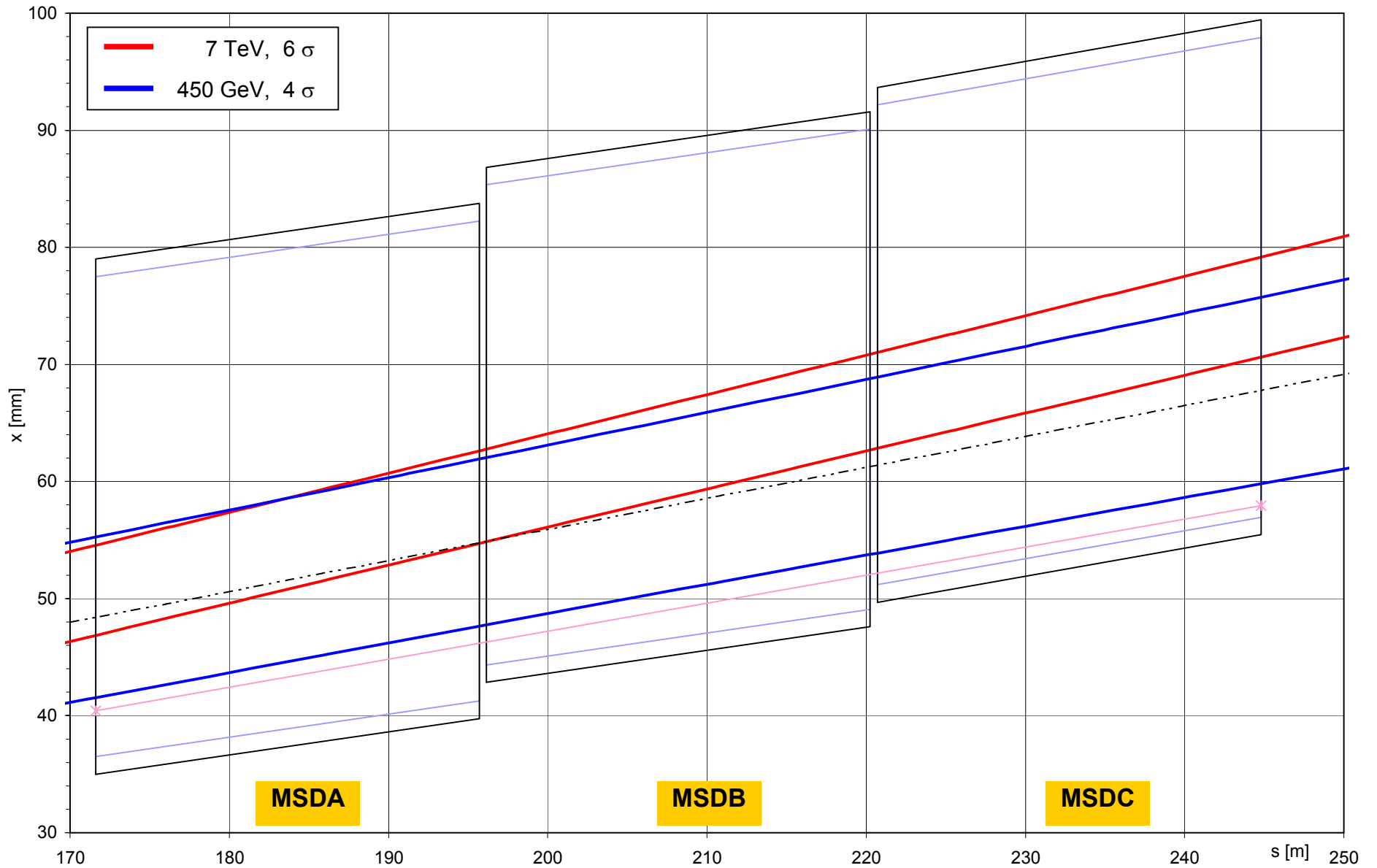
		450 GeV				7 TeV	
Q5.L6-c	x =	-1.98147	-2	2	1.981465	-1.981465467	2
	x' =	-0.02177	0	0	0.021772	-0.021771579	0
Q5.L6-ex	x =	-2	-1.98147	1.98147	2	-2	1.981465477
	x' =	0	0.02177	-0.02177	0	0	-0.021771579
TCDQ-entr	x =	23.96626	23.9663	23.9663	23.96626	6.076556596	6.076556596
	x' =	0.07487	0.07402	0.06671	0.065853	0.022348254	0.013331653
Q5.L6-c after 1 turn	x =	18.84586	18.5152	15.6753	15.34461	6.085060214	2.583807682
	x' =	-0.04628	-0.04655	-0.04888	-0.04915	-0.010662829	-0.013531597
Dump	x =	263.6748	263.2741	259.8334	259.4327	318.1470379	313.904988
	x' =						

k [mrad] = 0.271581226943836

Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.3915$, CO in Q5.L6 = -2mm)



Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.3915$, CO in Q5.L6 = +2mm)



Trajectories of particles grazing the TCDQ at 10 σ (450 GeV) and 20 σ (7 TeV)

LHC-tune: $Q_H = 64.57578$
 $Q_V = 59.31$

Phase advance TCDQ-entr. - Q5.L6-centre = 110.2701 ° 1.924576323 rad

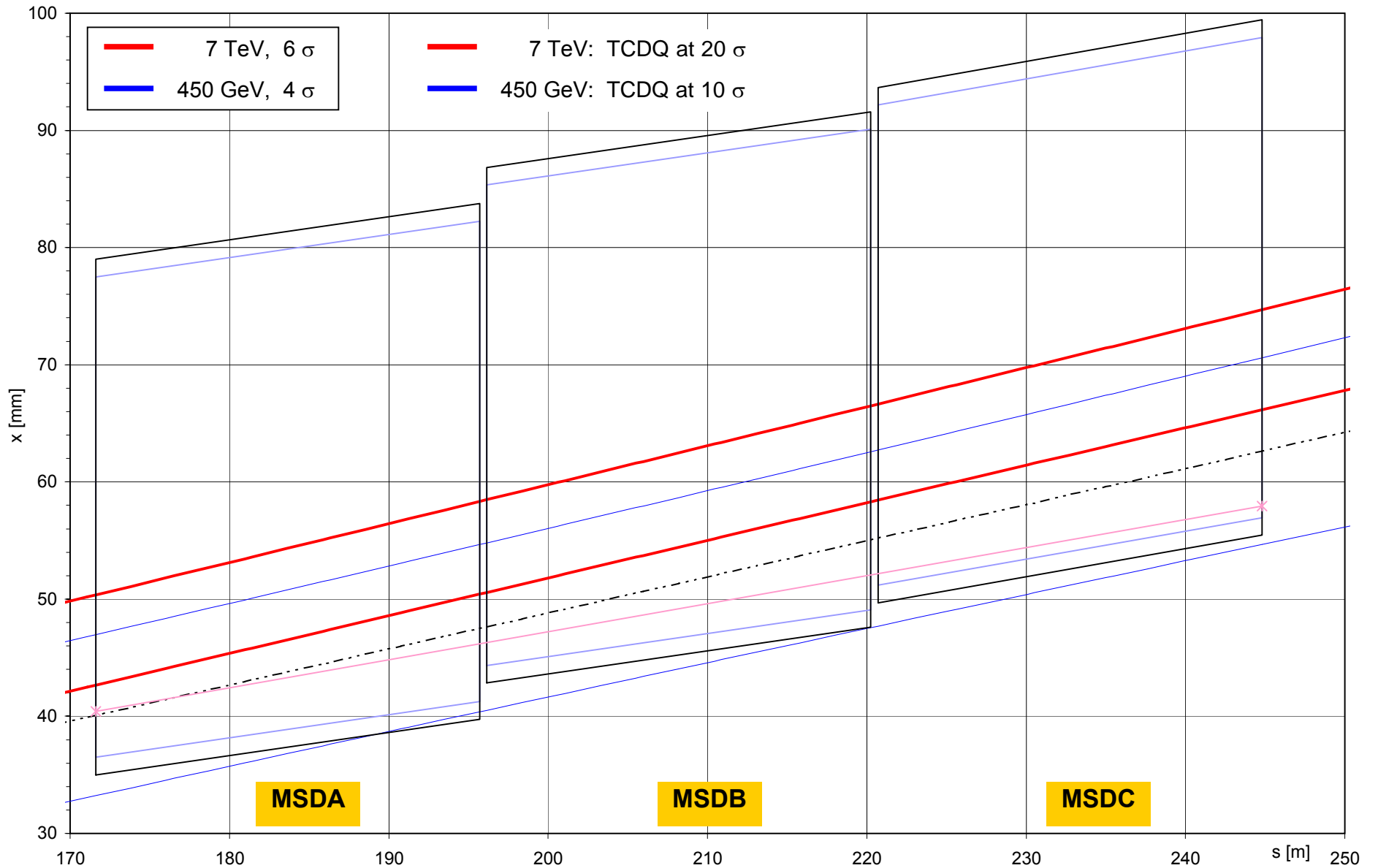
Transfermatrix TCDQ-entr. - Q5.L6-centre: $TM = \begin{vmatrix} -2.001297401 & 525.0793798 \\ 0.001121005 & -0.793793363 \end{vmatrix}$

TCDQ aperture limitation (10 σ) at **450 GeV:** 23.96626 mm
TCDQ aperture limitation (20 σ) at **7 TeV:** 12.15311 mm

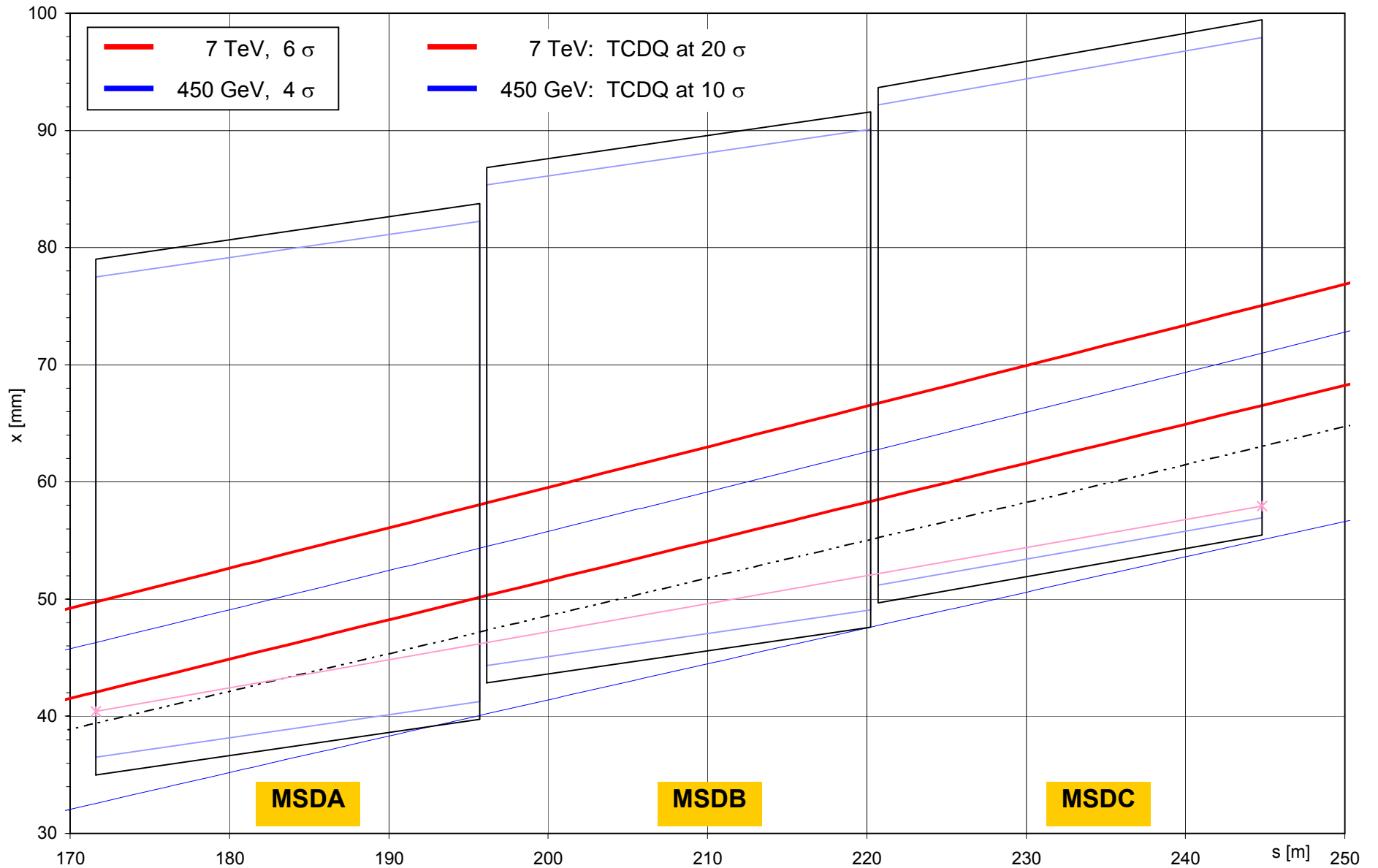
		450 GeV				7 TeV	
Q5.L6-c	x =	-1.98147	-2	2	1.981465	-1.981465467	2
	x' =	-0.02177	0	0	0.021772	-0.021771579	0
Q5.L6-ex	x =	-2	-1.98147	1.98147	2	-2	1.981465477
	x' =	0	0.02177	-0.02177	0	0	-0.021771579
TCDQ-entr	x =	23.96626	23.9663	23.9663	23.96626	12.15311319	12.15311319
	x' =	0.07487	0.07402	0.06671	0.065853	0.040188207	0.03202327
Q5.L6-c after 1 turn	x =	-8.65091	-9.0981	-12.9382	-13.3853	-3.219994839	-7.507235289
	x' =	-0.03257	-0.03189	-0.02608	-0.02541	-0.018277432	-0.011796159
Dump	x =	285.3744	286.415	295.3506	296.3912	306.8876937	316.8638924

k [mrad] = 0.271581226943836

Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.5758$, CO in Q5.L6 = -2mm)



Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.5758$, CO in Q5.L6 = +2mm)



Trajectories of particles grazing the TCDQ at 10 σ (450 GeV) and 20 σ (7 TeV)

LHC-tune: $Q_H = 64.07201$
 $Q_V = 59.31$

Phase advance TCDQ-entr. - Q5.L6-centre = -71.08995 ° -1.240753718 rad

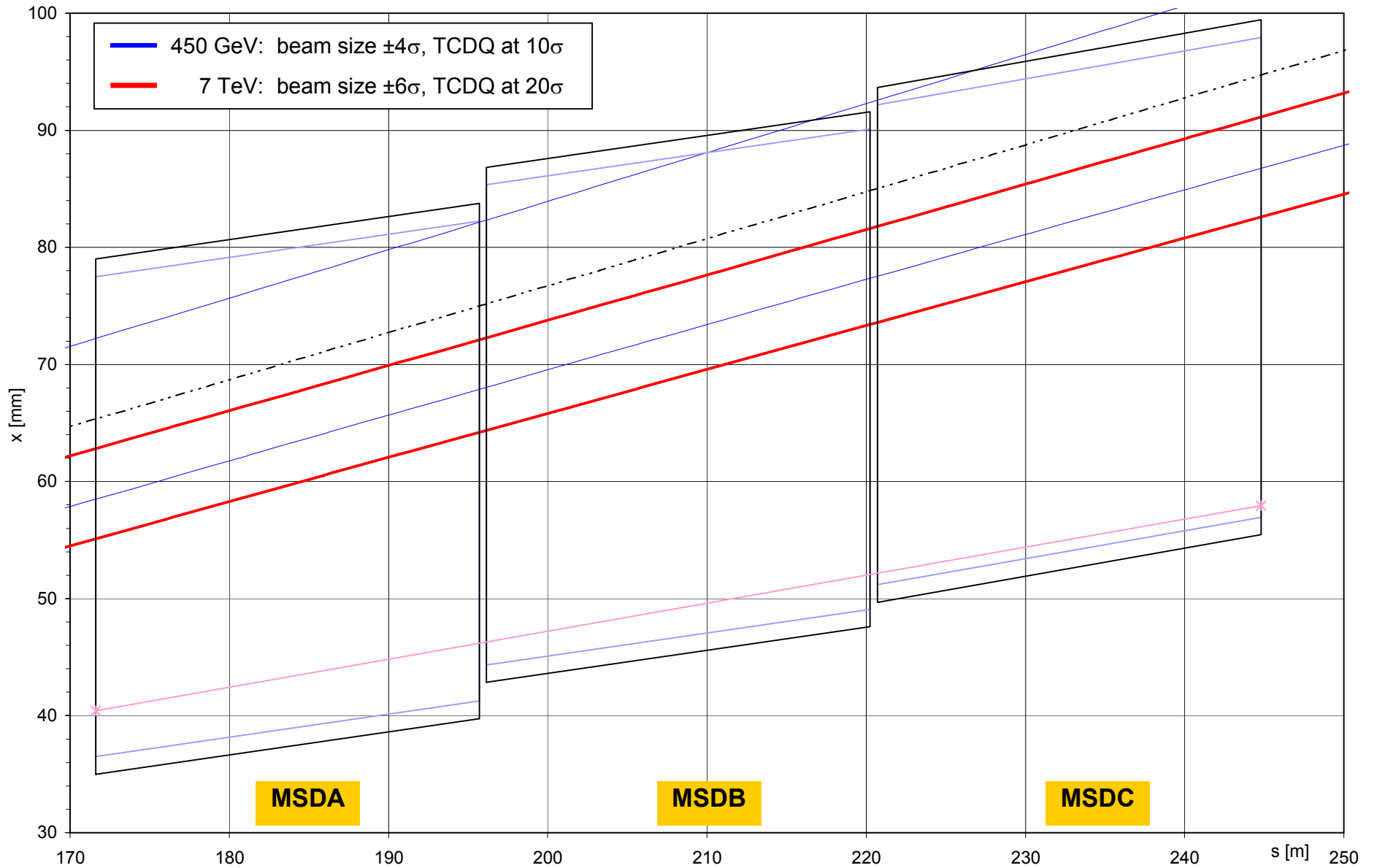
Transfermatrix TCDQ-entr. - Q5.L6-centre: $TM = \begin{vmatrix} 1.990983113 & -529.5342083 \\ -0.001033242 & 0.777071954 \end{vmatrix}$

TCDQ aperture limitation (10 σ) at **450 GeV:** 23.96626 mm
TCDQ aperture limitation (20 σ) at **7 TeV:** 12.15311 mm

		450 GeV				7 TeV	
Q5.L6-c	x =	-1.98147	-2	2	1.981465	-1.981465467	2
	x' =	-0.02177	0	0	0.021772	-0.021771579	0
Q5.L6-ex	x =	-2	-1.98147	1.98147	2	-2	1.981465477
	x' =	0	0.02177	-0.02177	0	0	-0.021771579
TCDQ-entr	x =	23.96626	23.9663	23.9663	23.96626	12.15311319	12.15311319
	x' =	0.07487	0.07402	0.06671	0.065853	0.040188207	0.03202327
Q5.L6-c after 1 turn	x =	8.070184	8.52117	12.3938	12.84478	2.915612566	7.239226413
	x' =	0.033416	0.03275	0.02707	0.02641	0.018672018	0.012327274
Dump	x =	384.9936	383.9746	375.2235	374.2044	362.7780375	353.0079144

k [mrad] = 0.271581226943836

Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.072$, CO in Q5.L6 = -2mm)



Horizontal Envelopes of Trajectories in the MSD ($Q_H = 64.072$, CO in Q5.L6 = +2mm)

