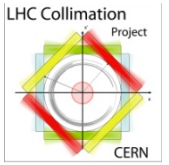


Beam losses and collimation cleaning at 3.5 TeV

A. Rossi, R.W. Assmann

CWG #108

	Family	setting 3.5 TeV [σ]
LSS7	TCP IR7	6.0
	TCSG IR7	8.8
	TCLA IR7	17.2
LSS6	TCDQ	11.6
	TCS TCDQ	10.2
LSS3	TCP IR3	8.3
	TCSG IR3	11.9
	TCLA IR3	13.9
LSS1	TCTH	12.8
	TCTV	12.8
	TCL	13.7
LSS2	TCTH	30.2
	TCTV	30.2
LSS5	TCTH	12.8
	TCTV	12.8
	TCL	13.7
LSS8	TCTH	15.3
	TCTV	15.3

Settings at 450GeV

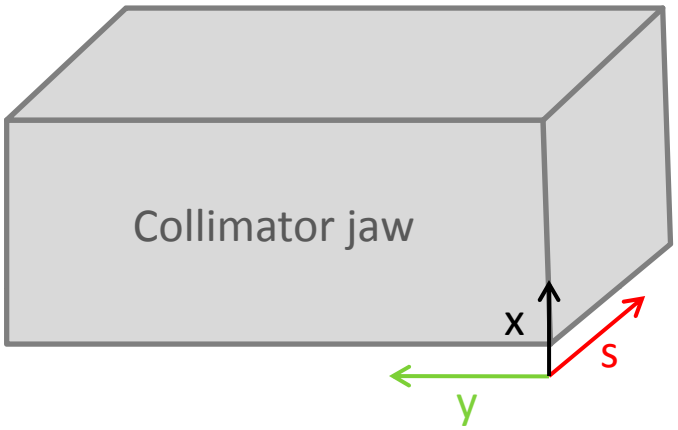
INTERMEDIATE SETTINGS SUMMARY

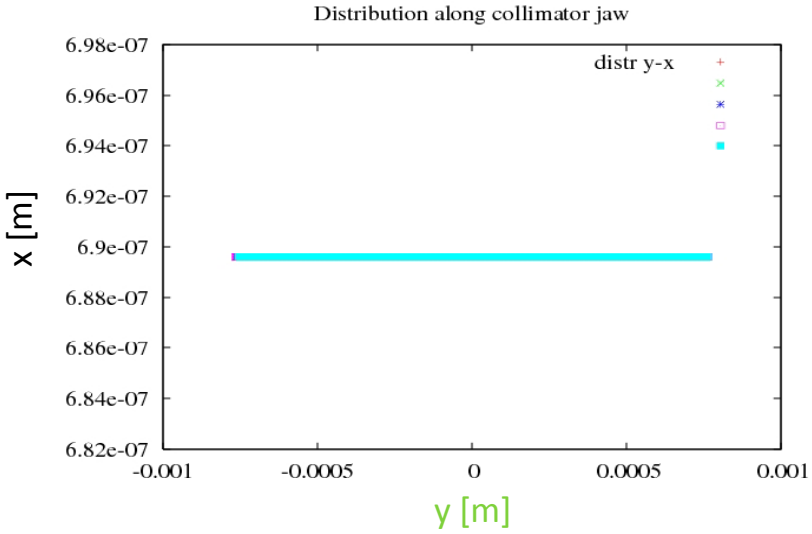
Note that Triplet Aperture (14σ) is ~ 3.8σ larger than TCS TCDQ settings

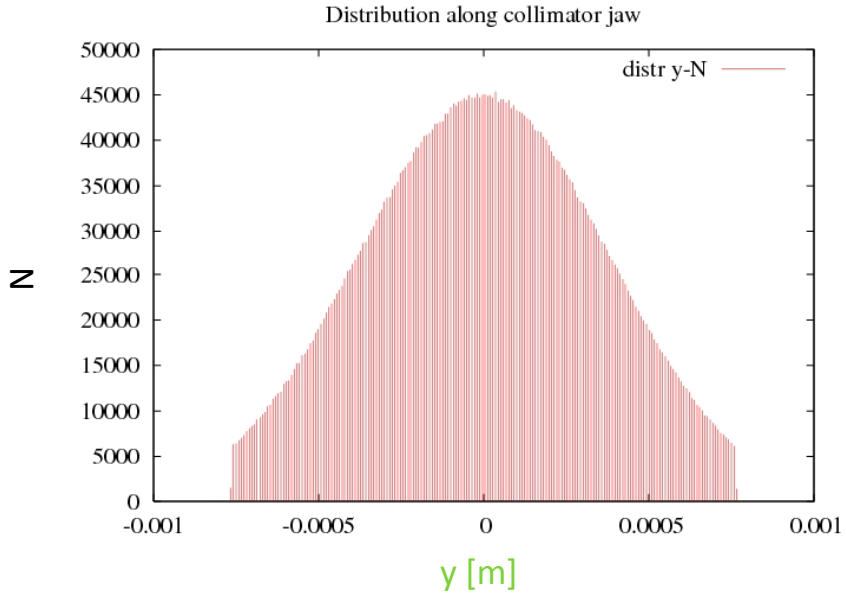
1.2 σ at TCT's taken to have equal tolerances for protection of TCTs with TCDQs and protection of the triplets with TCT's (IP1 & 5): Good protection with hopefully comfortable margin to learn

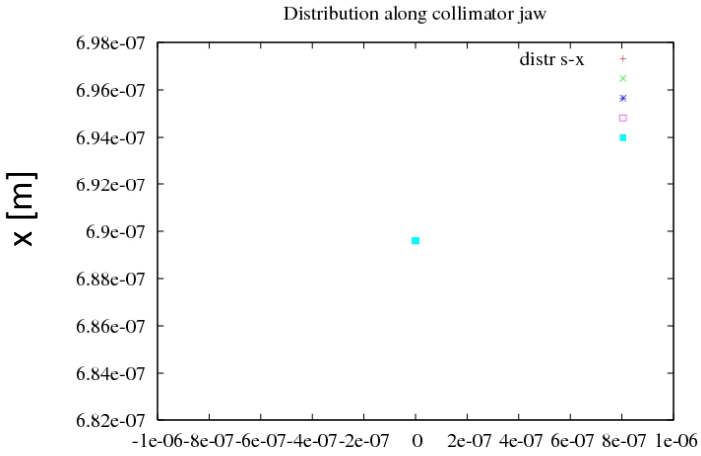
Early collimator setup, tertiary collimators as tight as necessary but not tighter (Background)

Initial distributions (pencil beam)

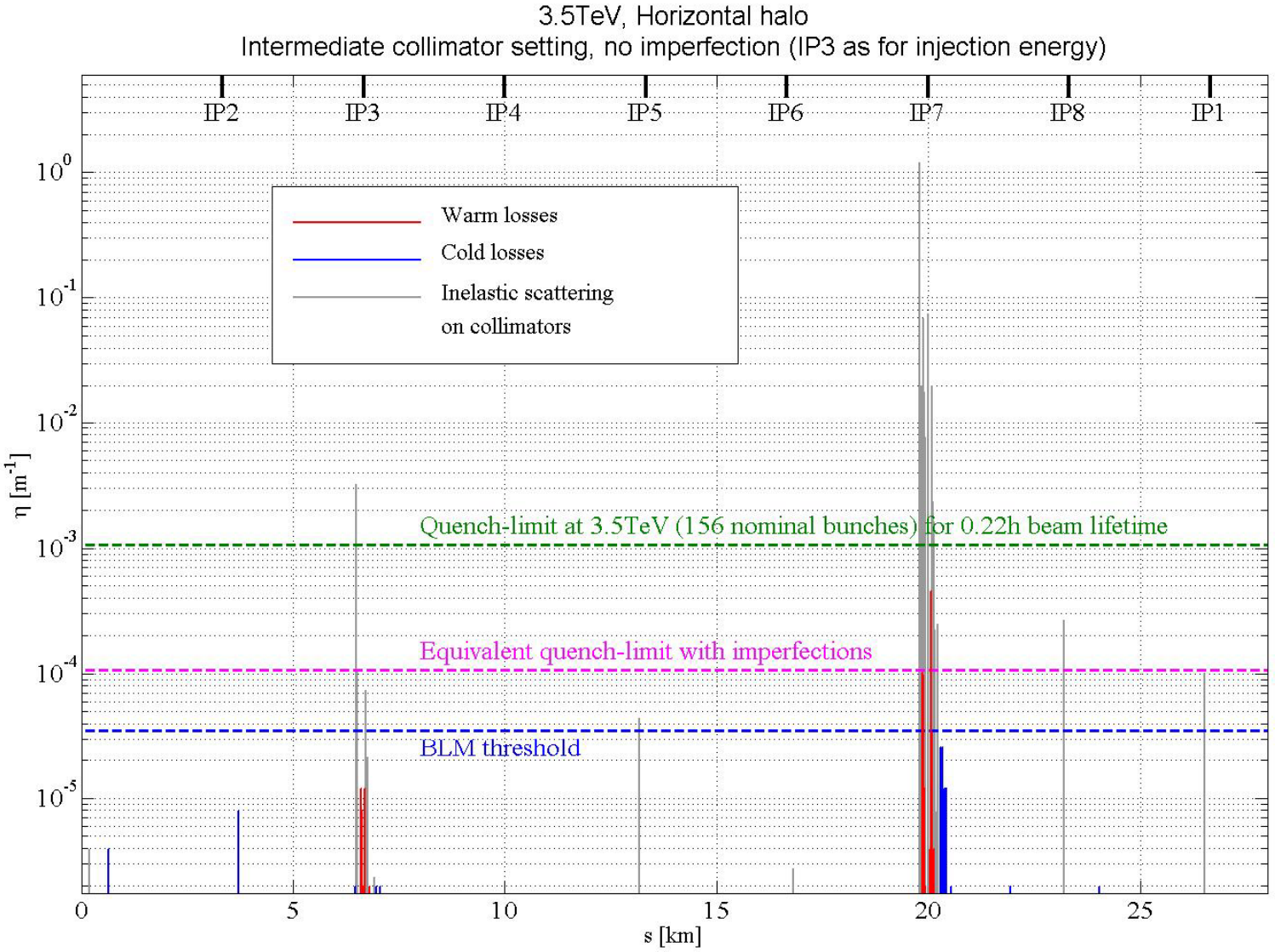








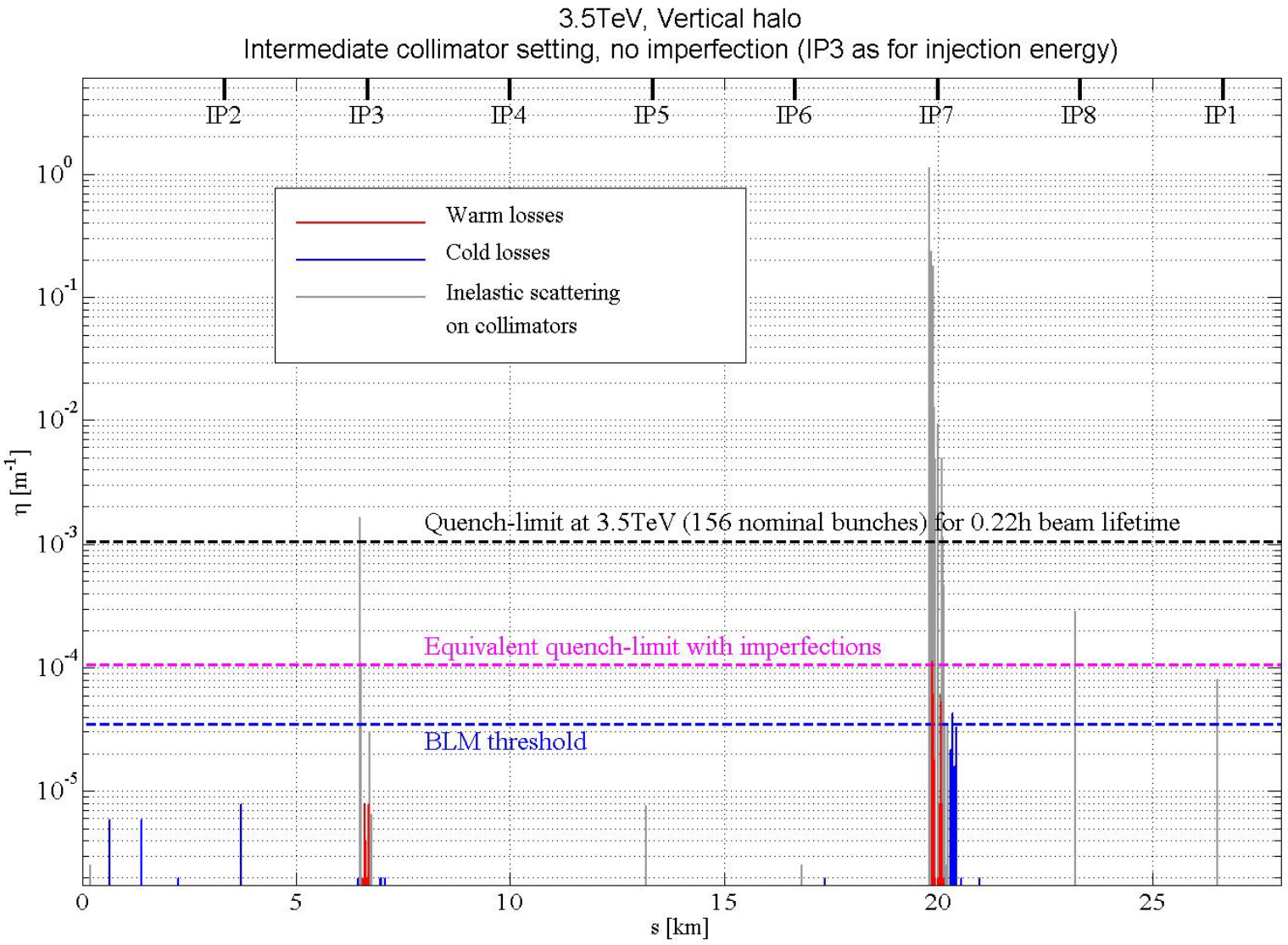
Beam 1 → Collimation Inefficiency



IDEAL case , NO IMPERFECTIONS:

Imperfections increase losses by about one order of magnitude (see PhD C. Bracco)

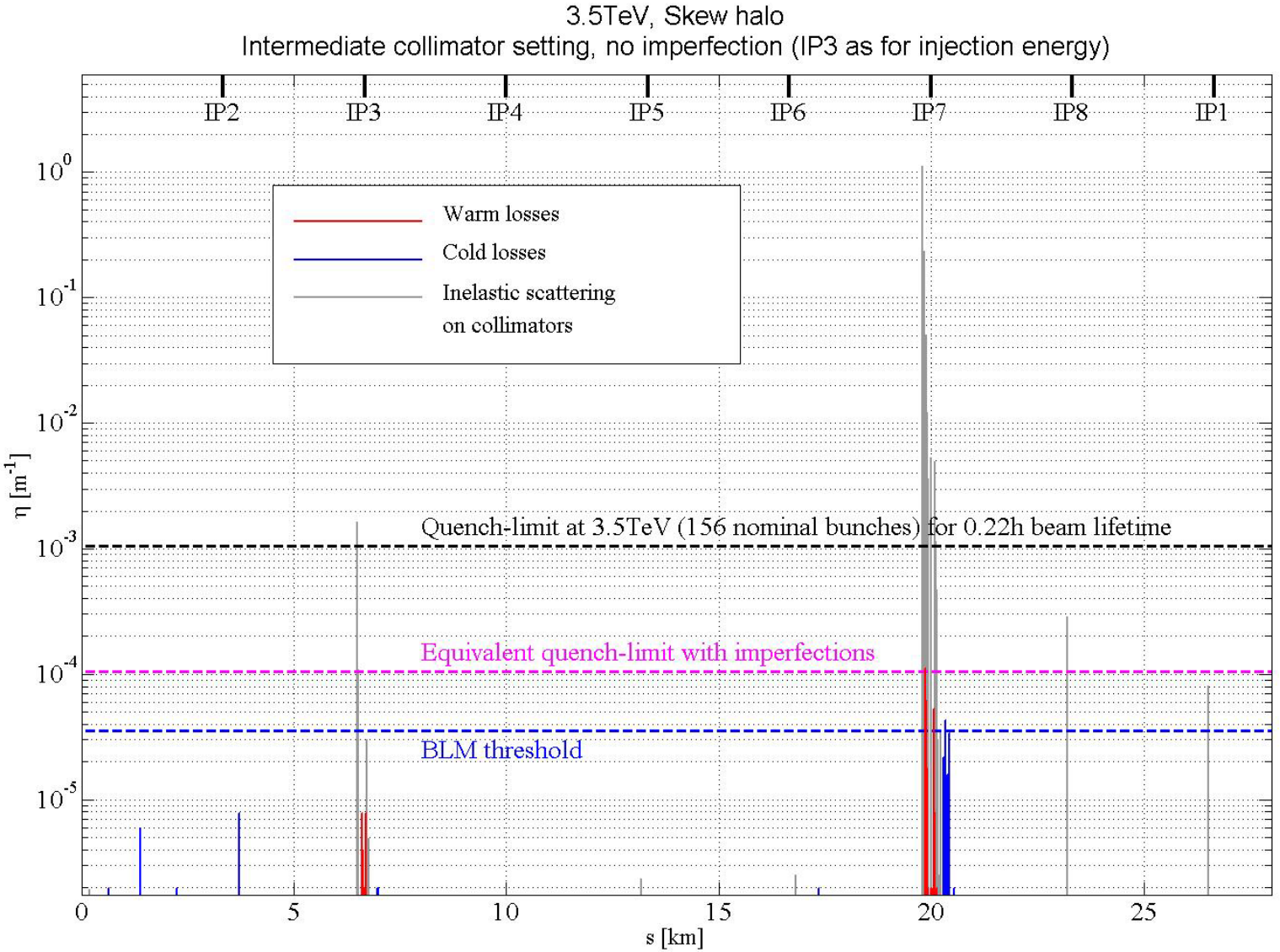
Beam 1 → Collimation Inefficiency



IDEAL case , NO IMPERFECTIONS:

Imperfections increase losses by about one order of magnitude (see PhD C. Bracco)

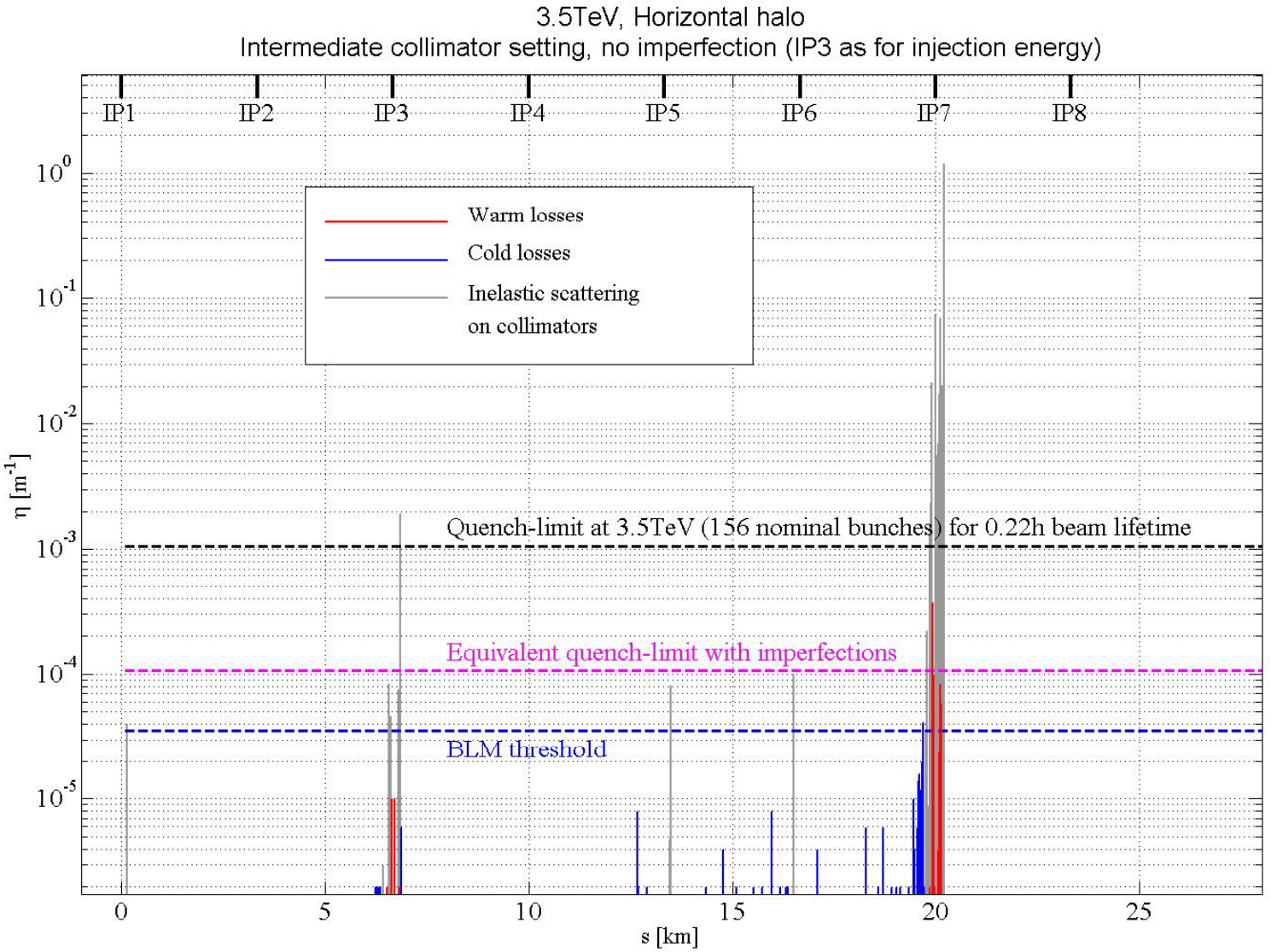
Beam 1 → Collimation Inefficiency



IDEAL case , NO IMPERFECTIONS:

Imperfections increase losses by about one order of magnitude (see PhD C. Bracco)

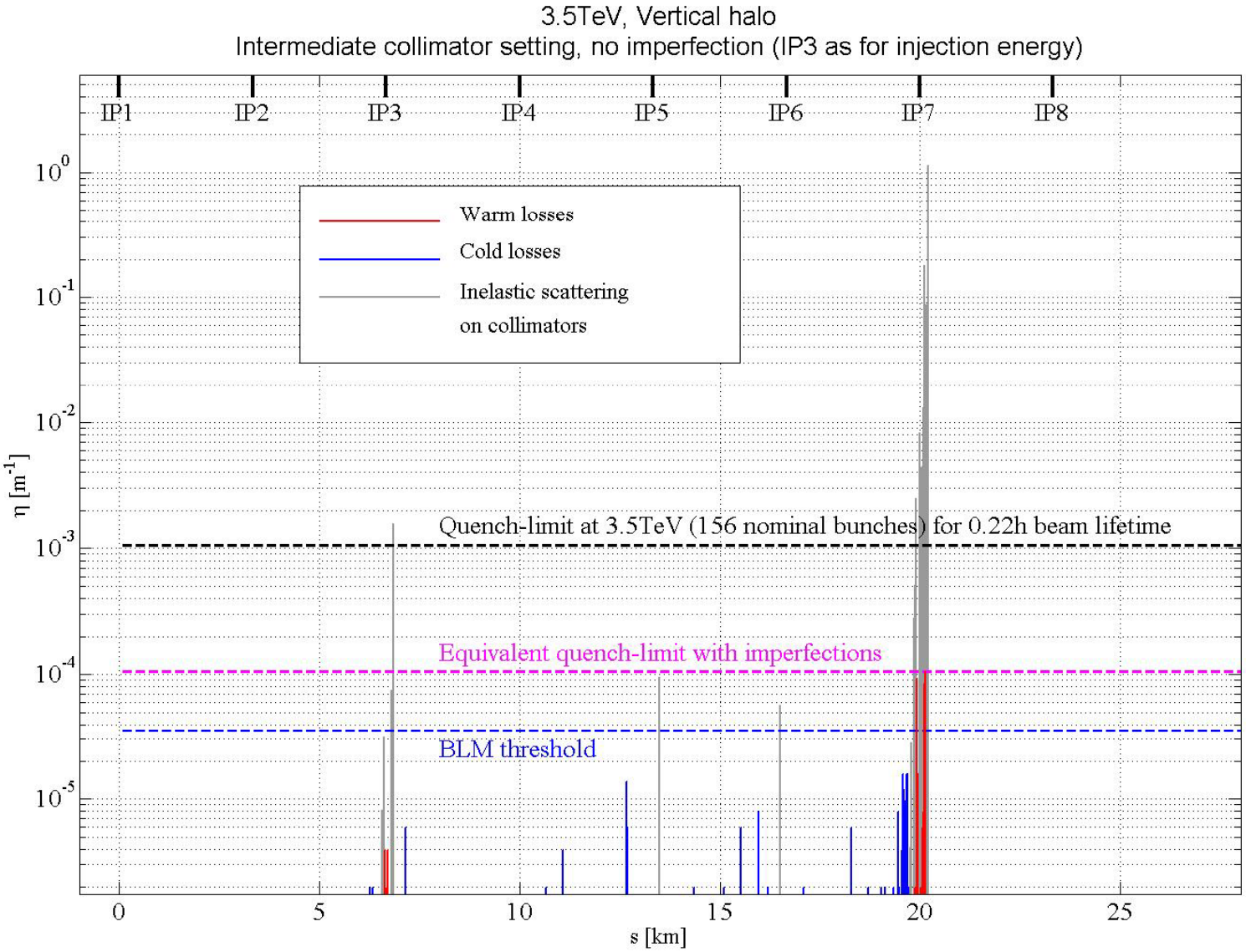
Beam 2 ⟸ Collimation Inefficiency



IDEAL case , NO IMPERFECTIONS:

Imperfections increase losses by about one order of magnitude (see PhD C. Bracco)

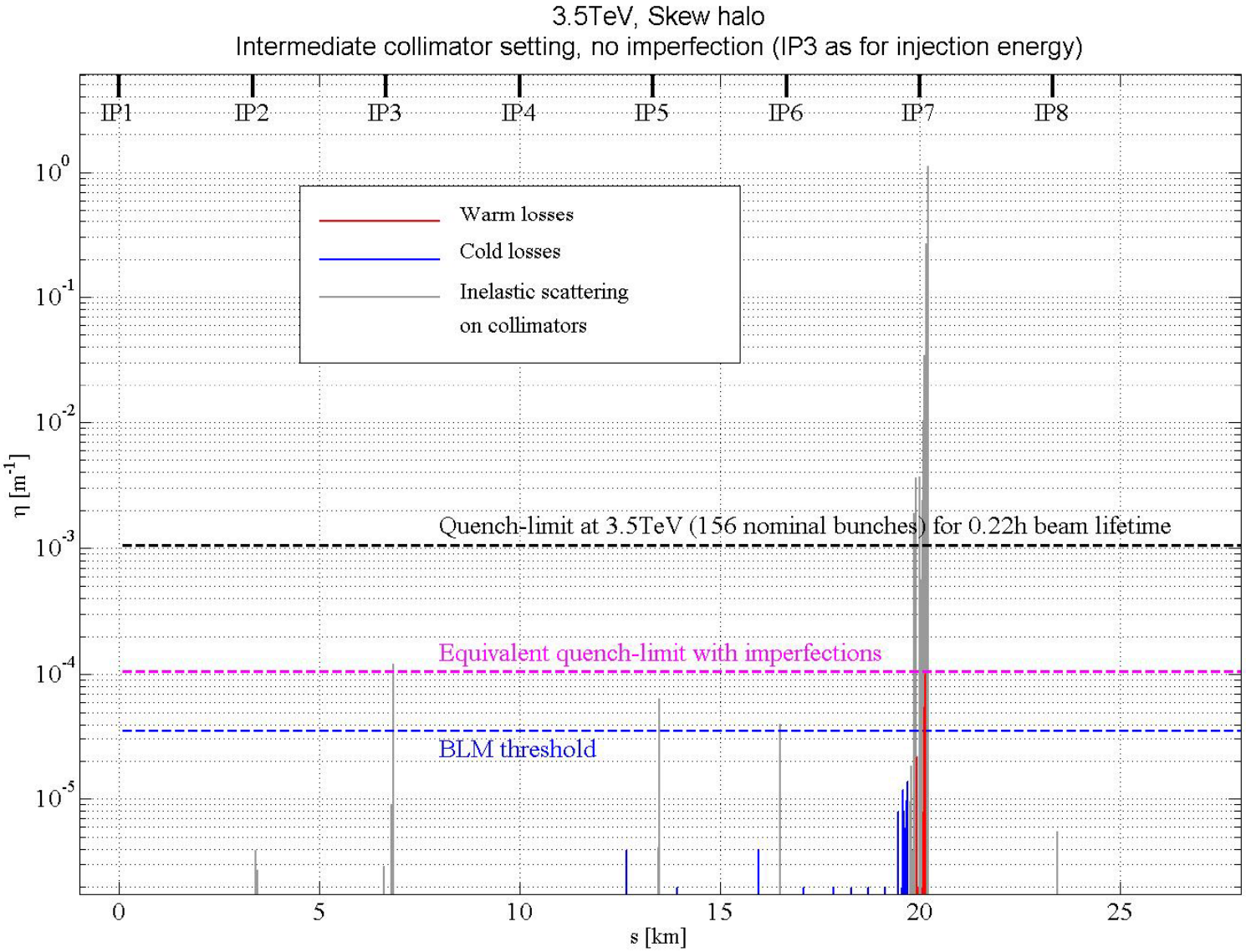
Beam 2 ⟸ Collimation Inefficiency



IDEAL case , NO IMPERFECTIONS:

Imperfections increase losses by about one order of magnitude (see PhD C. Bracco)

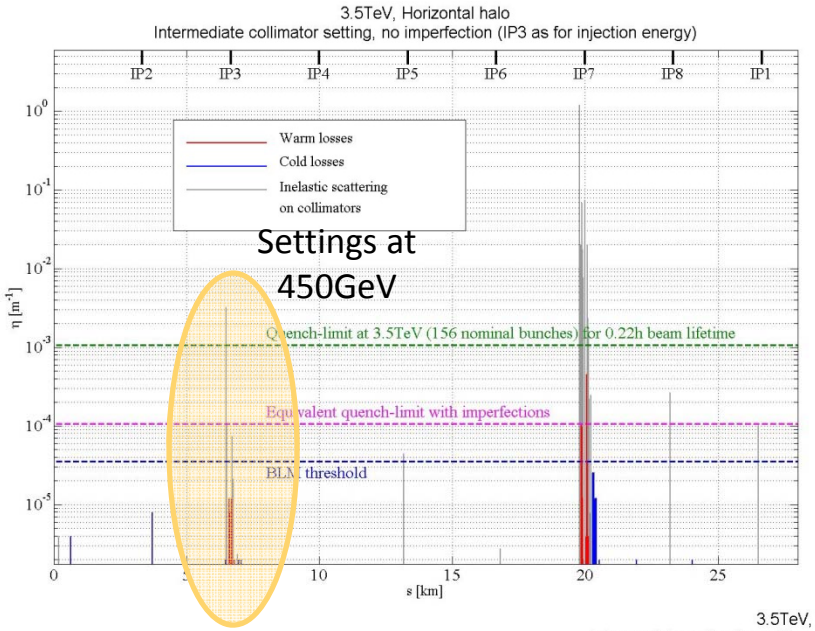
Beam 2 ⟸ Collimation Inefficiency



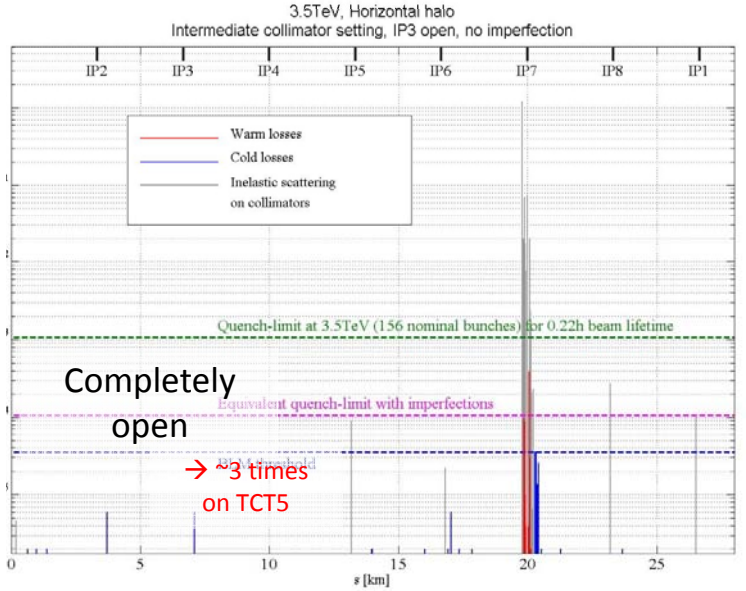
IDEAL case , NO IMPERFECTIONS:

Imperfections increase losses by about one order of magnitude (see PhD C. Bracco)

Beam 1 → Collimation Inefficiency with IP3 setting

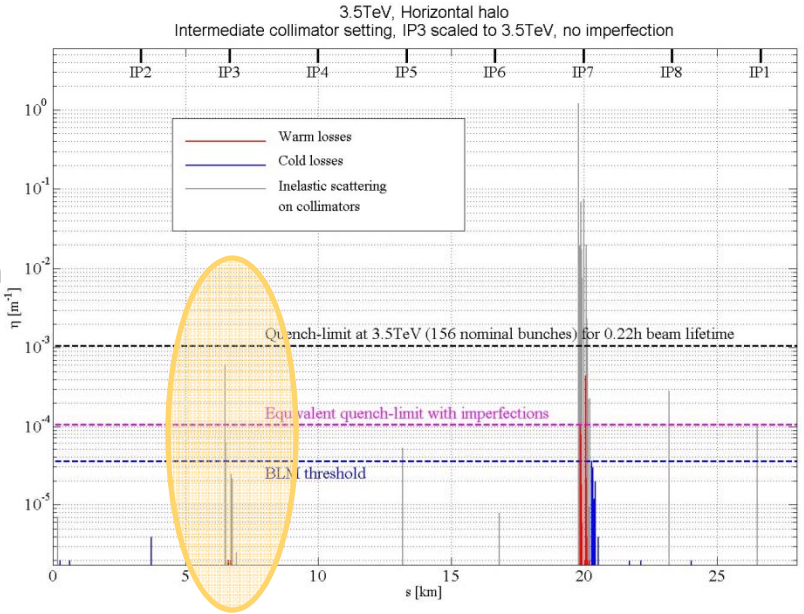


Settings at 450GeV



Completely open

→ ~3 times on TCT5



Settings at 3.5TeV to obtain same momentum cut as at 7TeV:

TCP3 10.6σ

TCS3 12.7σ

TCL3 14.1σ

Summary

- Simulations for Beam 1 and 2 and ideal case (no imperfection), completed.
- Imperfections will increase losses. Their effect will be included in the next round of simulations.
- IP3 collimator settings have an impact on losses on tertiaries (see for example the increase by a factor of 3 at TCT5, if they are open)