New (1): aperture TOLERANCE columns in TWISS output

Useful for checking:

select, flag = twiss, column = name, aptol_1, aptol_2, aptol_3;

rtol xtol ytol

* NAME	APERTYPE	APER_1	APER_2	APER_3	APER_4	APTOL_1	APTOL_2	APTOL_3
$ %s	%s	%le	%le	%le	%le	%le	%le	%le
"DFBXB.3R1"	"RECTELLIPSE"	0.028800	0.033700	0.033700	0.033700	0.003000	0.001000	0.001000
"DFBXC.3L2"	"RECTELLIPSE"	0.028800	0.033700	0.033700	0.033700	0.003000	0.001000	0.001000
"DFBXD.3R2"	"RECTELLIPSE"	0.028800	0.033700	0.033700	0.033700	0.003000	0.001000	0.001000
"DFBXE.3L5"	"RECTELLIPSE"	0.033700	0.028800	0.033700	0.033700	0.003000	0.001000	0.001000
"DFBXF.3R5"	"RECTELLIPSE"	0.033700	0.028800	0.033700	0.033700	0.003000	0.001000	0.001000
"DFBXG.3L8"	"RECTELLIPSE"	0.033700	0.028800	0.033700	0.033700	0.003000	0.001000	0.001000
"DFBXH.3R8"	"RECTELLIPSE"	0.033700	0.028800	0.033700	0.033700	0.003000	0.001000	0.001000
"DFBXA.3L1"	"RECTELLIPSE"	0.028800	0.033700	0.033700	0.033700	0.003000	0.001000	0.001000

New (2): Kmax and Imax defined in sequence file

Calib and **Kmax** are now properties of elements (like **L**) in MAD

In LHC sequence V6.501:

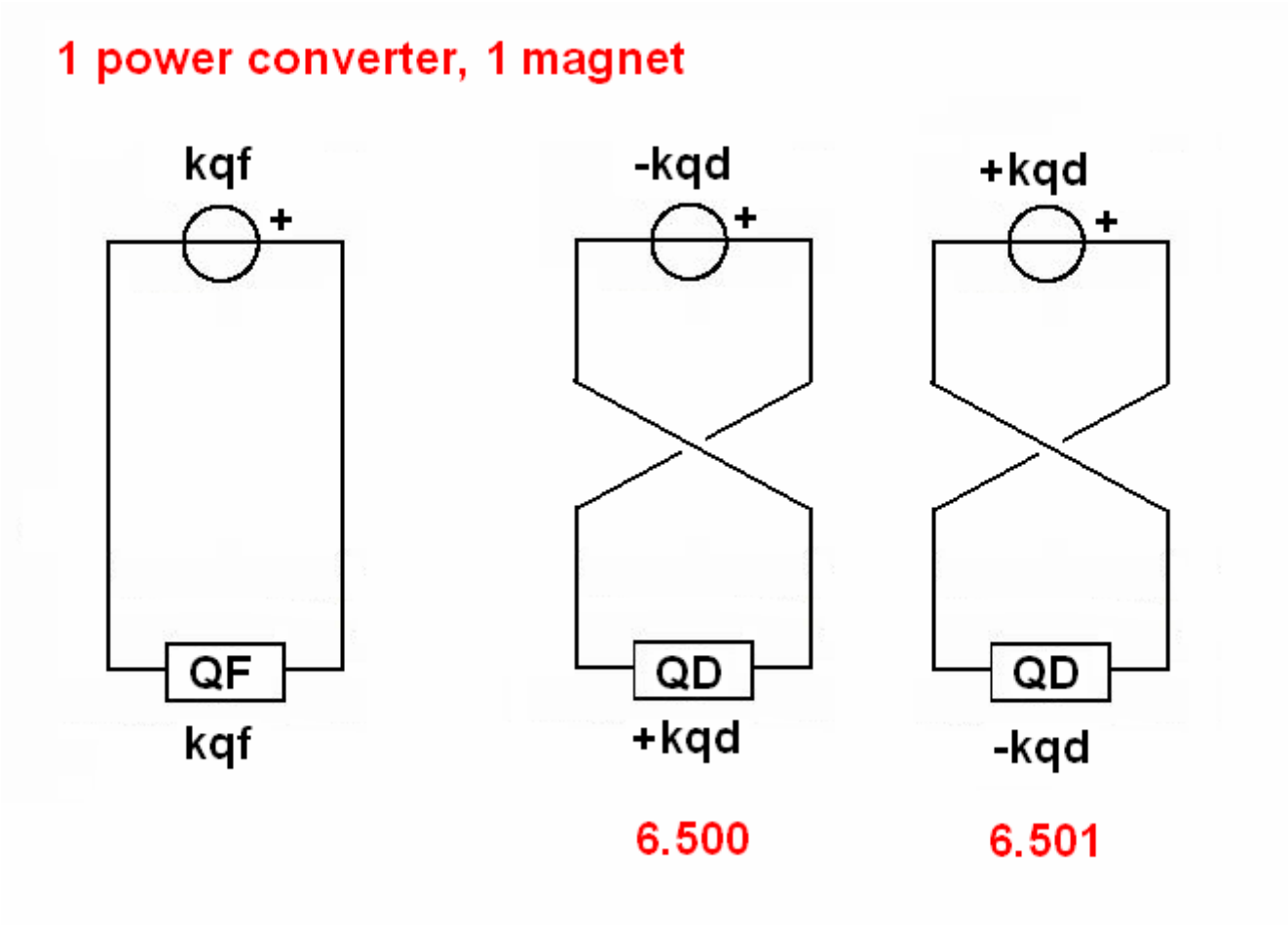
mqwa : quadrupole, l:=l.mqwa, kmax:=kmax_mqwa, calib:=kmax_mqwa/imax_mqwa;

allowing the user to define and list a large variety of quantities:

* NAME	FIELD	KMAX	AMPERE	IMAX	PERCENT
$ %s	%le	%le	%le	%le	%le
"MQXA.1R1"	195.227955318	205.000000000	6456.807497824	6780.000000000	95.233148935
"MQXA.1L2"	220.001121102	205.000000000	7276.134639382	6780.000000000	107.317620050
"MQXA.1R2"	220.001121102	205.000000000	7276.134639382	6780.000000000	107.317620050
"MQXA.1L5"	195.227955318	205.000000000	6456.807497824	6780.000000000	95.233148935
"MQXA.1R5"	195.227955318	205.000000000	6456.807497824	6780.000000000	95.233148935
"MQXA.1L8"	222.049317502	205.000000000	7343.874988587	6780.000000000	108.316740245
"MQXA.1R8"	222.049317502	205.000000000	7343.874988587	6780.000000000	108.316740245
"MQXA.1L1"	195.227955318	205.000000000	6456.807497824	6780.000000000	95.233148935

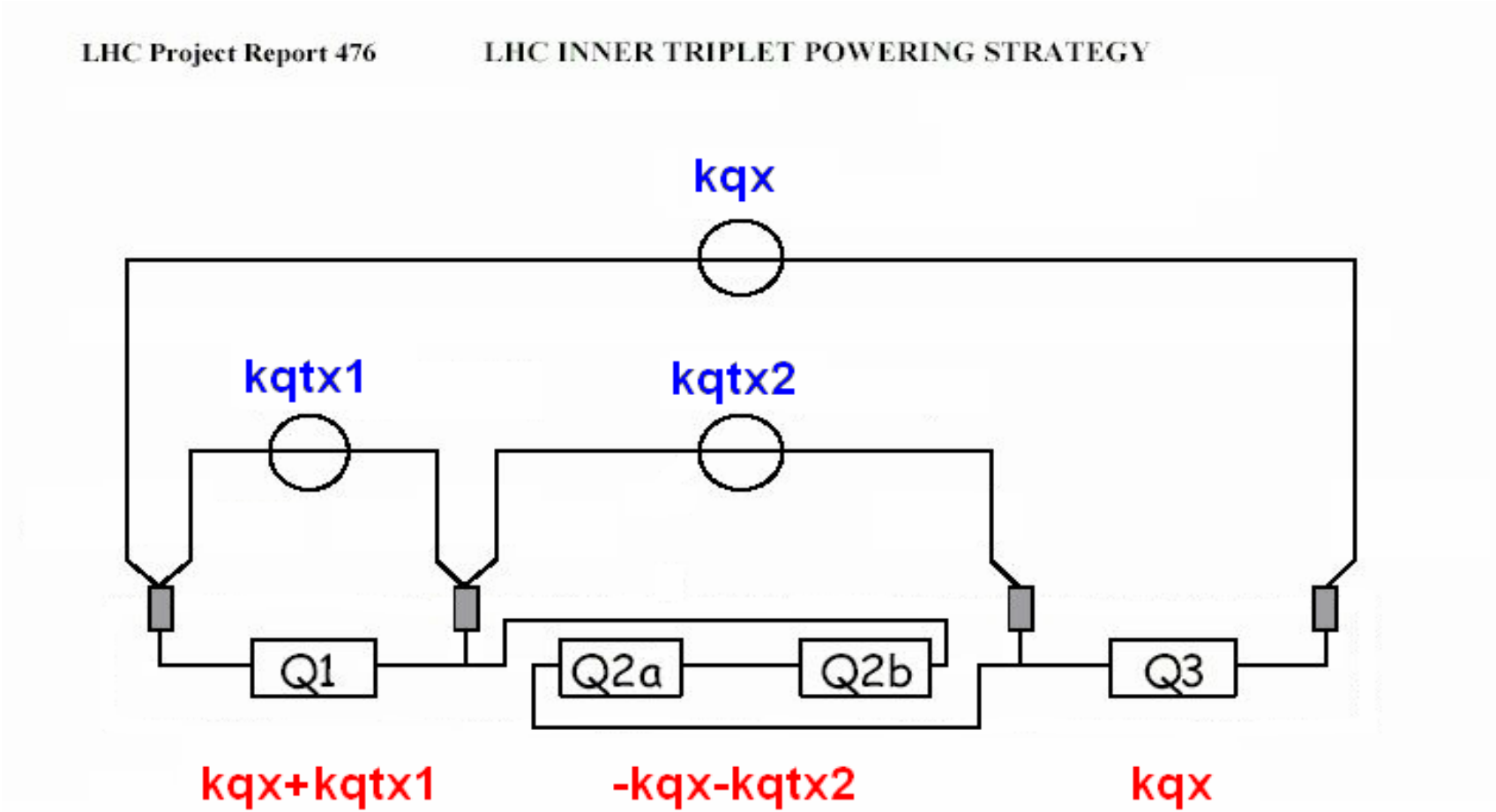
Polarities in sequence and strength files (1)

What exactly is the meaning of the strength variables ?



Polarities in sequence and strength files (2)

Variables represent **PC** strengths rather than **magnet** strengths :



Polarities in sequence and strength files (3)

Trim quad (bipolar) has same “wiring” as adjacent main quad,

so its polarity definition depends on the polarity of the main quad.

More difficult to guess the polarity from the MAD input files.