Sensitivity to the vibration of each quadrupole.

1) from requirement of the beam size at IP:
   $\sigma_y < 1.02\ \sigma_{y0}$

2) from requirement of the position shift at IP:
   $\Delta y < 0.20\ \sigma_{y0}$, corresponds to be
   $\sigma_y < 1.02\ \sigma_{y0}$ for the projected beam profile.

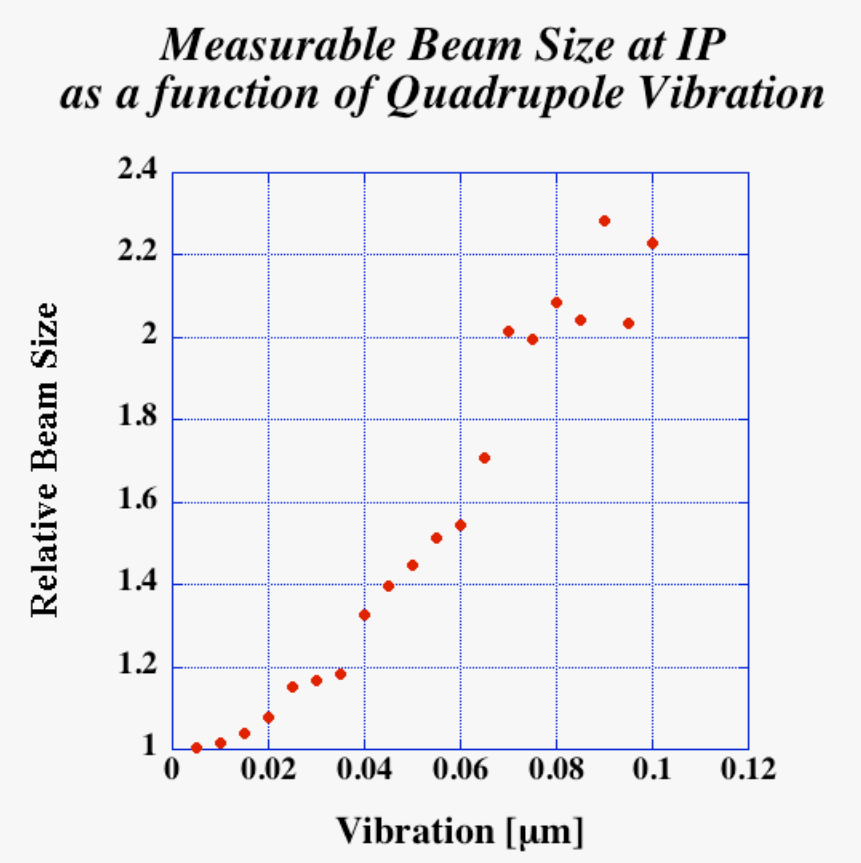
	σ_y [μm]		Δy [nm]
QD9X	13.85		287.7
QF9X	5.95		756.3
QD10X	1.42		1637.3
QF10X	3.24		1906.4
QD11X	5.43		815.1
QF11X	76.47		1051.0
QD12X	6.08		613.3
QM16	27.56	(37.69)	915.7
QM15	25.90	(16.47)	16.2
QM14	6.51	(2.23)	59.6
QM13	23.36	(20.26)	383.7
QM12	4.07	(5.00)	48.3
QM11	******		******
QD10	2.12	(2.13)	24.2
QD10A	2.18	(2.22)	25.3
QF9	3.51	(3.36)	39.0
QF9A	2.78	(2.52)	53.3
QD8	0.63	(0.53)	39.3
QF7	0.86	(0.72)	1378.9
QD6	0.59	(0.53)	40.1
QF5	3.13	(2.54)	53.8
QF5A	10.56	(7.69)	39.1
QD4	4.39	(4.62)	25.4
QD4A	4.51	(4.93)	24.2
QD2B	1.18	(1.00)	46.5
QF3	1.00	(0.85)	307.7
QD2A	0.75	(0.63)	236.2
QF1	2.05	(1.91)	12.6
QD0	4.88	(4.70)	4.4

( ) ; evaluated by A.Seryi
the definition of tolerance is Max ($\Delta\sigma_x$, $\Delta\sigma_y$) < 2%

Simulated Condition;

1) QD0, QF1 are fixed, I assumed the random vertical position error for the other quads (from QD9X to QD2A).

2) The 100 simulated results are superposed and the beam size at IP are evaluated by using the projected profile.



Sensitivity to the rotation of each quadrupole $\sigma_y < 1.02\ \sigma_{y0}$

	rotation [μrad]
QD9X	******
QF9X	******
QD10X	******
QF10X	1321.10
QD11X	******
QF11X	******
QD12X	******
QM16	******
QM15	1205.00
QM14	871.76
QM13	916.92
QM12	124.84
QM11	******
QD10	34.55
QD10A	20.65
QF9	16.07
QF9A	21.56
QD8	51.43
QF7	******
QD6	53.51
QF5	21.84
QF5A	16.18
QD4	20.64
QD4A	34.13
QD2B	129.30
QF3	536.27
QD2A	168.83
QF1	0.84
QD0	0.92