

LAViSta: **L**aboratories in **A**nnecy working on **V**ibration **S**tabilization

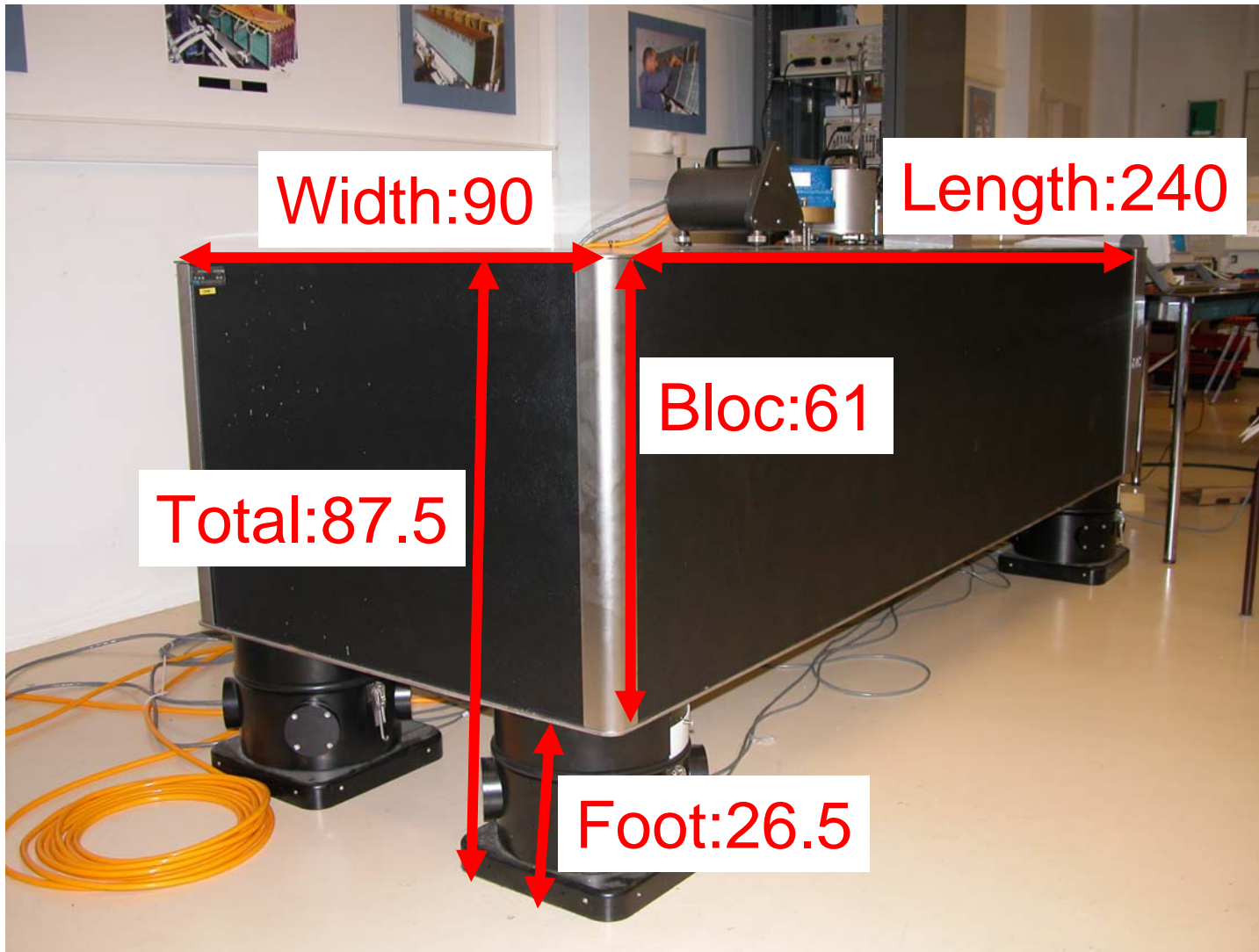
Reflections on stabilization table

B.Bolzon, F.Cadoux, N.Geffroy, A.Jeremie, Y.Karyotakis

CERN Stacis 2000 table currently in Annecy, France.



A.Jeremie



Values are in cm and measured directly on the table with a tape-measure.
Static load capacity per foot (there are 4) 182 kg to 500 kg.
Honeycomb bloc has a weight of 731kg.

Table weight capacity



A.Jeremie

Information written on the STACIS 2000 feet we have:
3 feet with max weight 544kg, and one with max weight 500kg
(standard table has three feet, but one can buy with 4 feet).

⇒ Max weight 2131kg.

⇒ Honeycomb bloc weighs 731kg

⇒ Total weight capacity left:1400kg

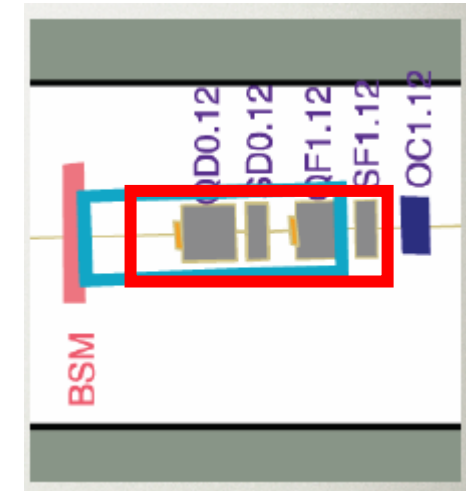
Two setup considered for ATF2

From T.Sanuki U.Tokyo

1. Shintake monitor (BSM) on table: not really a solution

Shintake monitor:	740kg
support:	estimated at 100kg
QD0:	400kg
mover:	estimated 25kg
T-plate:	10kg

=> total Shintake + QD0 without extra BPMs: **1275kg**
not enough capacity to add SD0 etc...



1. Shintake monitor on separate support: closer to ILC situation

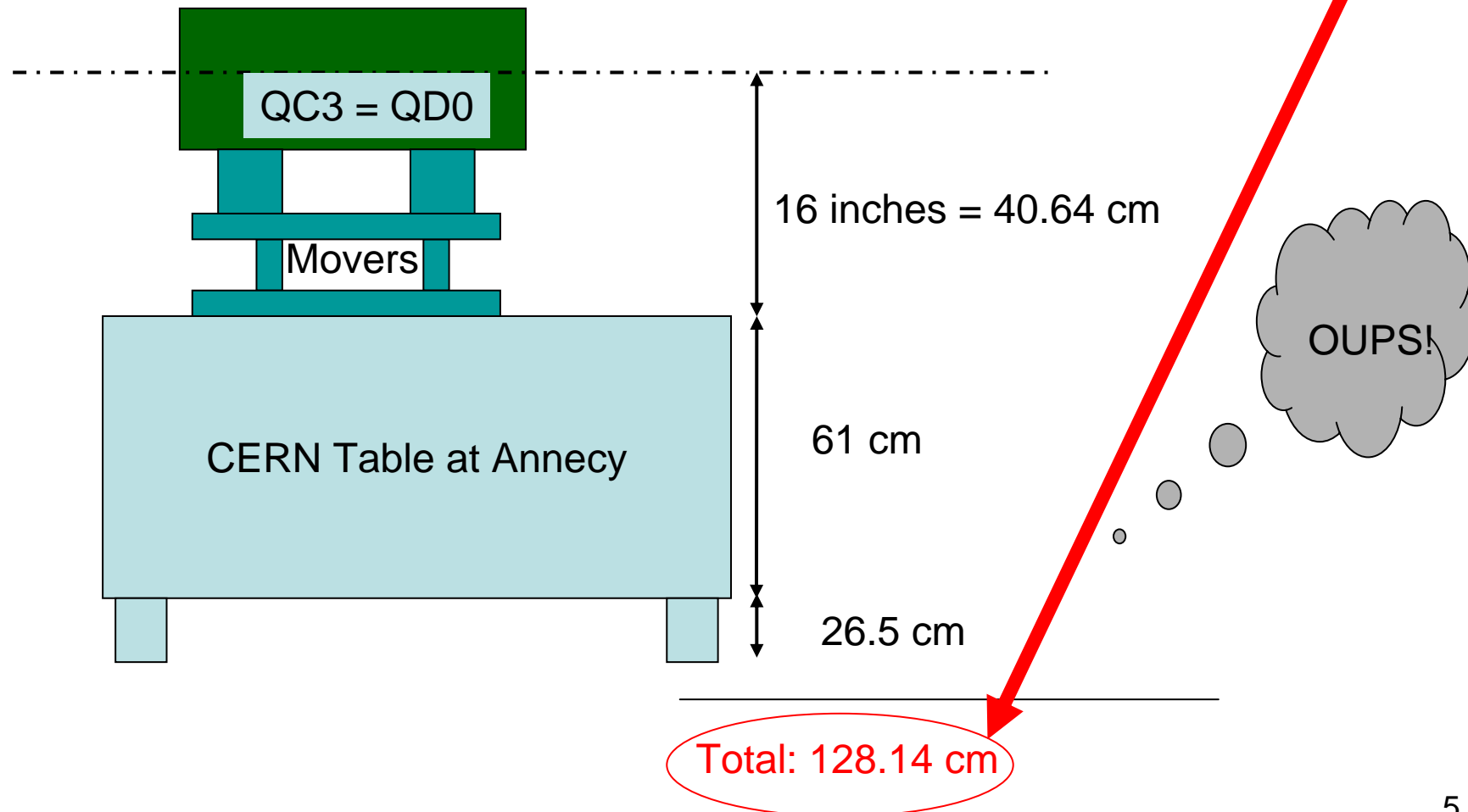
QD0+mover+T-plate:	estimated at 435kg
SD0+mover+T-plate:	estimated at 181kg
QF1+mover+T-plate:	estimated at 435kg
SF1+mover+T-plate:	estimated at 181kg

=>total QD0+SD0+QF1+SF1 without extra BPMs: **1232kg**
not enough capacity to add OC1

Magnet
information
from
Ch.Spencer

Height to beam-line

In a message from Tauchi san, the beam-line is at a height of 120cm



Two options for these 8 cm

Buy thinner table

Price for a thinner table:
 0.9x2.4x0.45 9597euros
 0.9x2.4x0.3 8520 euros

No pricing yet for longer tabletops but

Work on movers

See Nicolas Geffroy's presentation

Guaranteed Maximum Compliance Levels - Tops with Maximum Fixed Damping Level (micro-in./lb force input)						
Top Thickness	Top Length					
	6' (1.8 m)	8' (2.4 m)	10' (3.0 m)	12' (3.6 m)	14' (4.2 m)	16' (4.8 m)
8 in. (200 mm)	3.0	5.5	10.0	15.0	20.0	30.0
12 in. (300 mm)	1.5	2.5	4.5	6.5	10.0	13.0
18 in. (450 mm)	0.7	1.5	2.5	3.5	5.0	7.0
24 in. (600 mm)	0.3	0.7	1.5	2.0	2.5	3.5

Guaranteed Minimum Resonant Frequency (Hz) - All Series of TMC Tops						
Top Thickness	Top Length					
	6' (1.8 m)	8' (2.4 m)	10' (3.0 m)	12' (3.6 m)	14' (4.2 m)	16' (4.8 m)
8 in. (200 mm)	160	135	110	85	65	55
12 in. (300 mm)	200	170	135	110	85	70
18 in. (450 mm)	230	210	165	130	100	80
24 in. (600 mm)	250	230	185	150	120	90

Guaranteed Maximum Static Deflection - All Series of TMC Tops with 3/16 in. (5 mm) Skins (micro-in./lb force)						
Top Thickness	Top Length					
	6' (1.8 m)	8' (2.4 m)	10' (3.0 m)	12' (3.6 m)	14' (4.2 m)	16' (4.8 m)
8 in. (200 mm)	0.3	0.6	1.0	1.5	2.0	3.0
12 in. (300 mm)	0.12	0.2	0.35	0.6	0.8	1.0
18 in. (450 mm)	0.06	0.1	0.15	0.25	0.3	0.4
24 in. (600 mm)	0.05	0.07	0.1	0.15	0.2	0.25

Contact with table manufacturer TMC

Commercial mail received from TMC

Also, the STACIS system you have was originally shipped in 2001. It is out of warranty, With several piezo-electric transducers (PZT) in EACH isolator, it is possible, that after 4 1/2 years, one or more PZT has failed. I recommend to have the system completely refurbished with all new "long-lifetime" components that are used in the new generation of the STACIS product. The price is \$7500 per isolator (compared to about \$15,000 per isolator for NEW). If you do not refurbish the complete system, you may find that one or more isolator is not working, and you would learn this only after the system is installed.

I contacted PZT experts at our university with an answer in September:

PZTs do age with time, the structure relaxes and loses it's piezoelectric properties! They can lose 10-15% efficiency over 4 to 7 years. If small load, then no problem, But when at 90% capacity, there could be less efficiency to stabilize! We plan to put at least 1232kg with a maximum of 1400kg => 88%! And once the magnets are in place, it is difficult to repair!

If we refurbish: $4 \times 7,500 \$ = 30,000 \$$