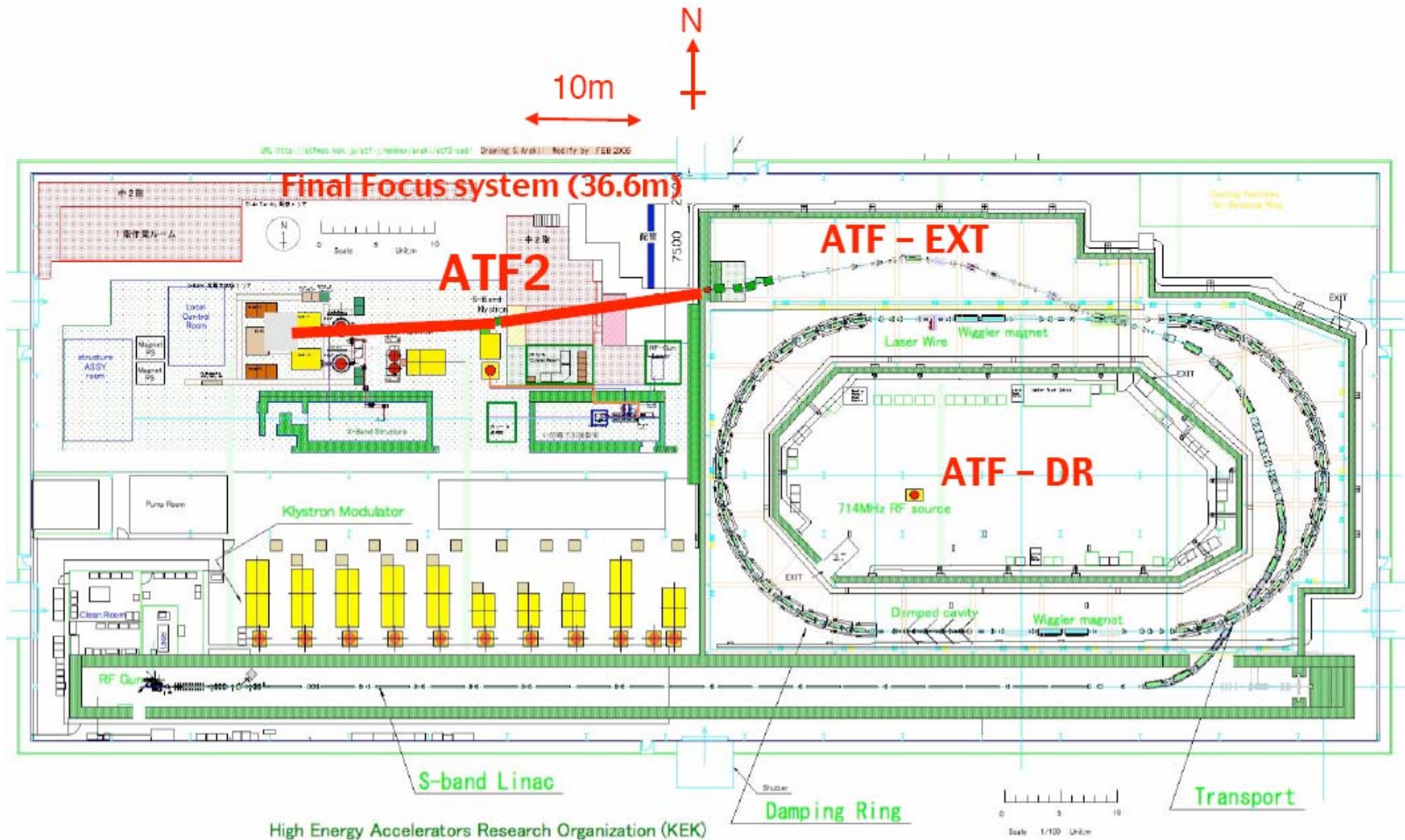


ATF2 @ KEK

Report on ATF2 funding meeting held at
KEK On 28.05.2005

Nick Walker

ATF-2 Proposal: ILC FF test-bed



Mode-I

A. Achievement of 37nm beam size

- A1) Demonstration of a new compact final focus system; proposed by P.Raimondi and A.Seryi in 2000,
- A2) Maintenance of the small beam size (several hours at the FFTB/SLAC)

Mode-II

B. Control of the beam position

- B1) Demonstration of beam orbit stabilization with nano-meter precision at IP.
(The beam jitter at FFTB/SLAC was about 20nm.)
- B2) Establishment of beam jitter controlling technique at nano-meter level with ILC-like beam (2008 -?)

Requirements

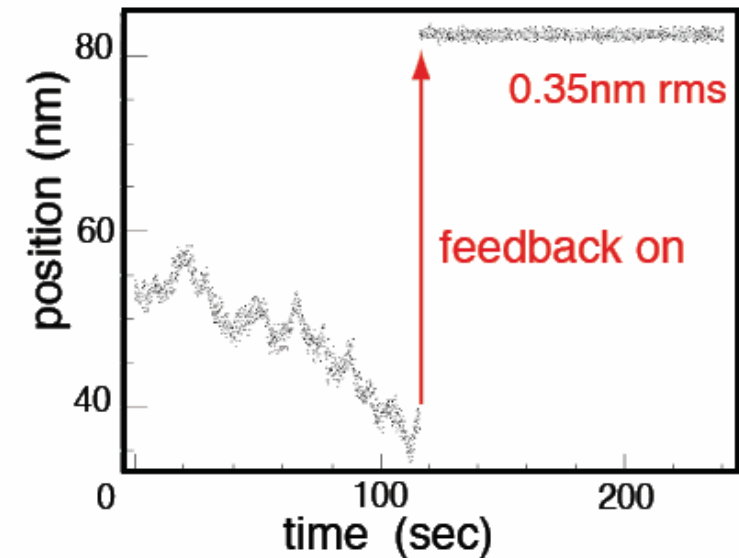
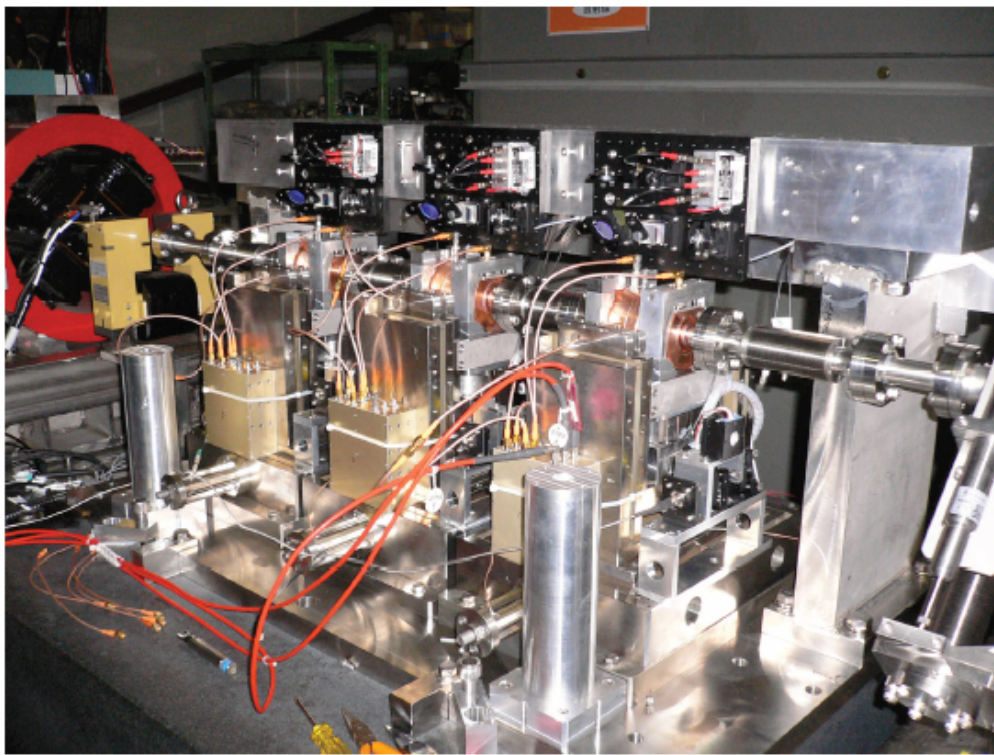
Mode	ATF-EXT	ATF2
I	<p>Jitter < 30% of σ_y</p> <p>$\gamma\epsilon_y = (4.5 \rightarrow 3) \times 10^{-8}\text{m}$</p>	<p>BSM (laser in higher mode)</p> <p>BPMs with 100nm res. at Qs</p> <p>Power supplies of < 10^{-5}</p> <p>Active mover of Final Q</p>
II	<p>Jitter < 5% of σ_y</p> <p>(2nm jitter at FP)</p>	<p>BPM with < 2nm res. at FP</p> <p>Intra-bunch feedback for ILC style beam</p>

T.Tauchi, LCPAC

KEK 3-Cavity BPM system for nm resolution study

Goal < 2nm

**KEK Design nm mover and nm position feedback,
KEK design BPM and electronics**



Performance of nm Mover

System is under beam test now

**3 BPMs on nm mover,
BPM Y positions are locked by laser interference position monitor
and piezo actuator feedback.**

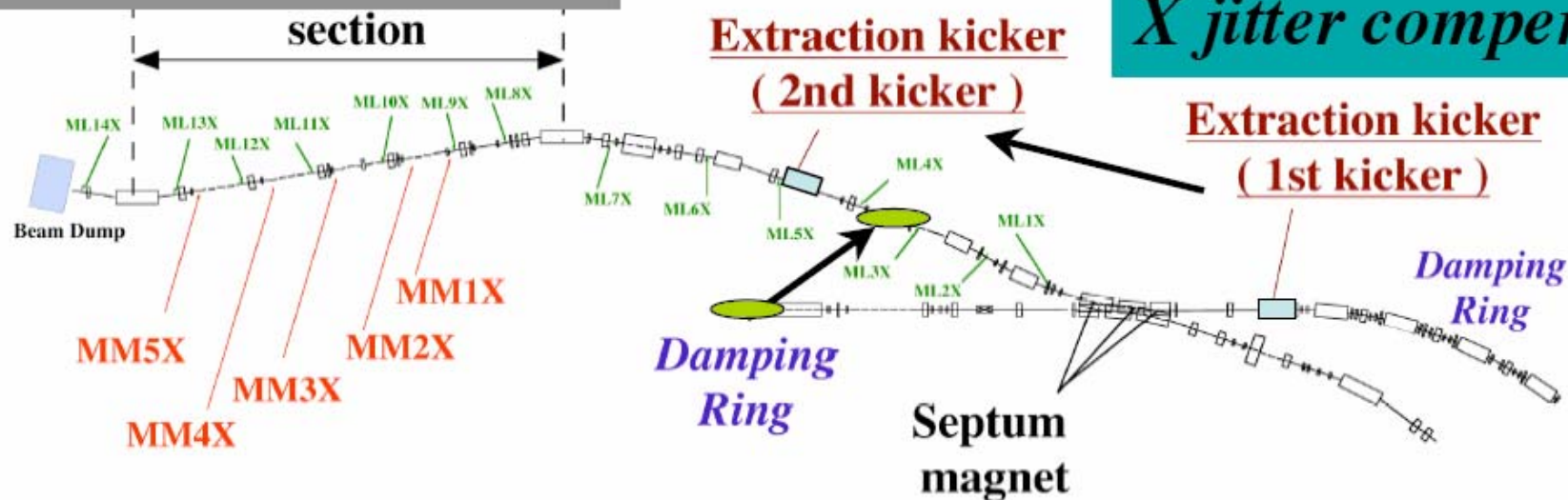
Jitter Control for 5% σ_y

Layout of KEK-ATF Extraction Line

Intra-bunch

nm Fast Feedback

*Double kicker
X jitter compensation*



μm Feedforward

(DR BPM -> EXT Line new stripline kicker)

proposed by H. Hayano

Required Budget

1 Oku¥ \approx 1 M\$ \approx 0.75 MEuro

- Construction cost

0.6 Oku¥ Conventional facility (floor refurbishment, shield)

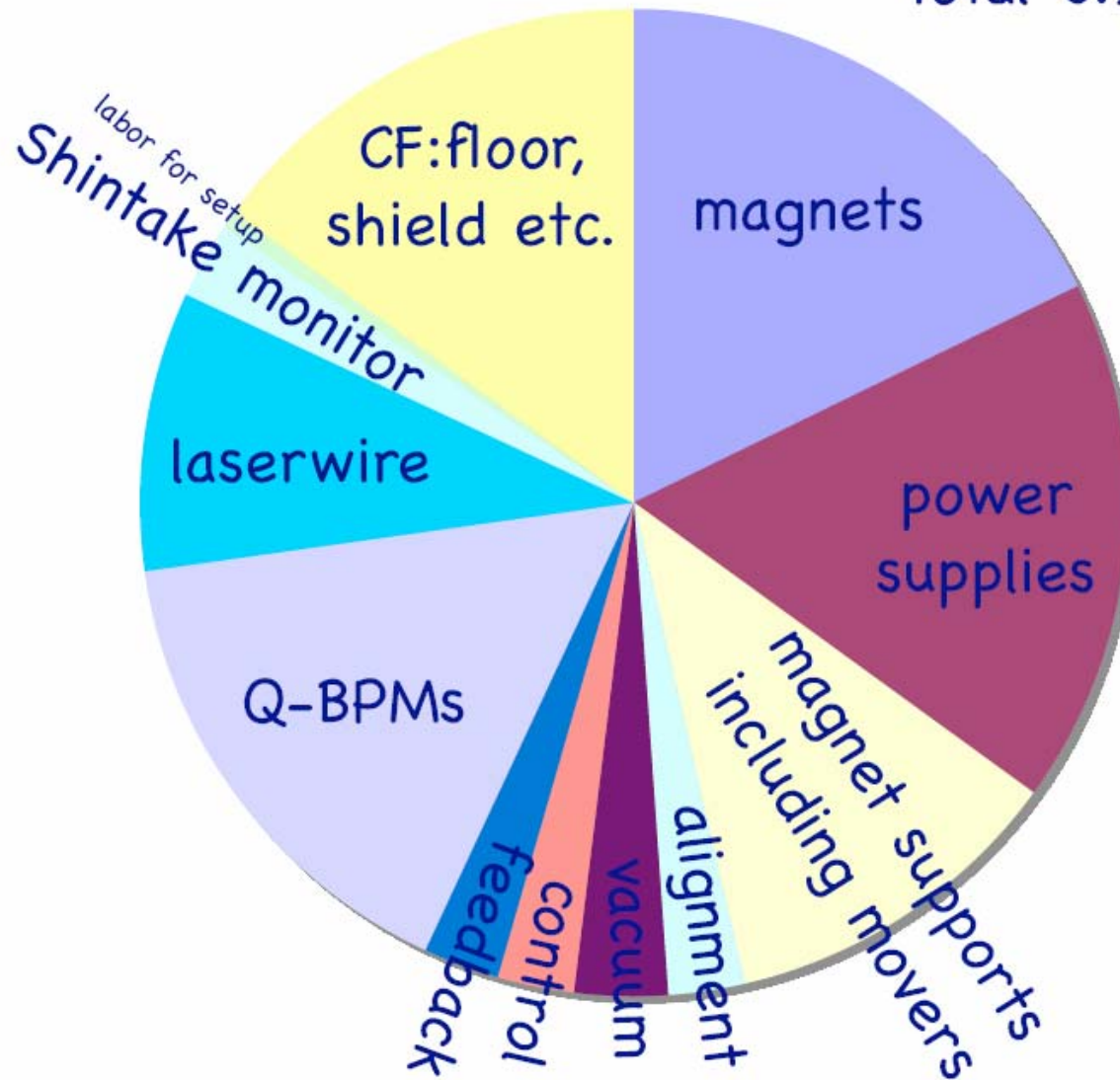
3.3 Oku¥ Others (Beamline components for baseline layout)
(0.4 Oku¥ lower for 'Optimal layout')

- Operation cost

~1.5 Oku¥ / year (for entire ATF)

Cost Estimation for the Baseline Layout

Total 3.9+ α Oku-y



How to Share the Expenses

'Equal share' of construction budget

1.7 Oku¥	Asia
1.1 Oku¥	N.America
1.1 Oku¥	Europe

Subjects of Discussion

- How to get the remaining items ⇒ work list
- What does 'Equal share' mean?
 - Dollar, Euro ⇒ 'contribution' measured in ¥
 - Hardware components ⇒ 'contribution' measured in ¥
 - How to evaluate manpower?

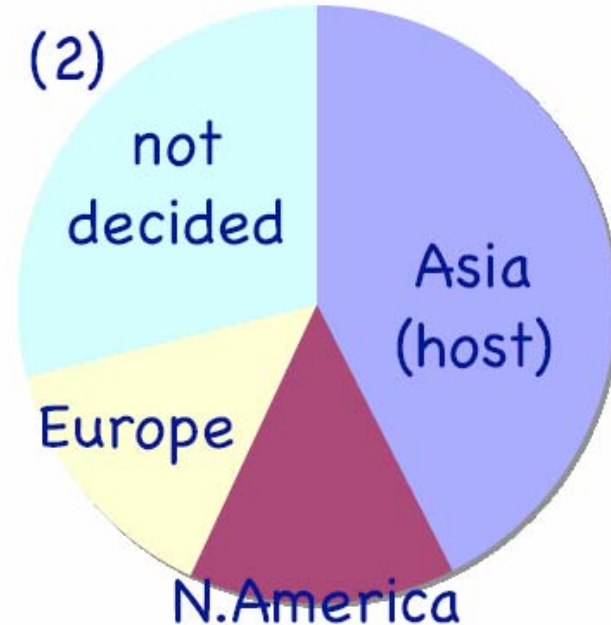
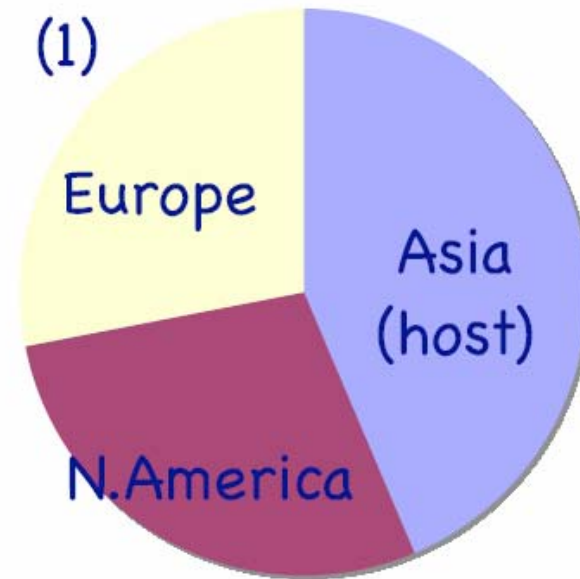
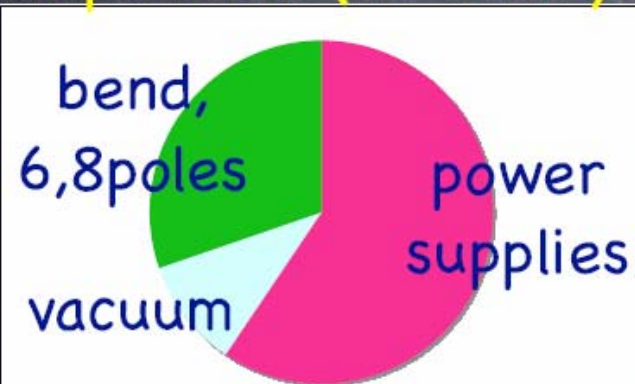
(1) mini-ILC model

equal sharing on the components, while the host country prepares the conventional facility.

(2) tentative status

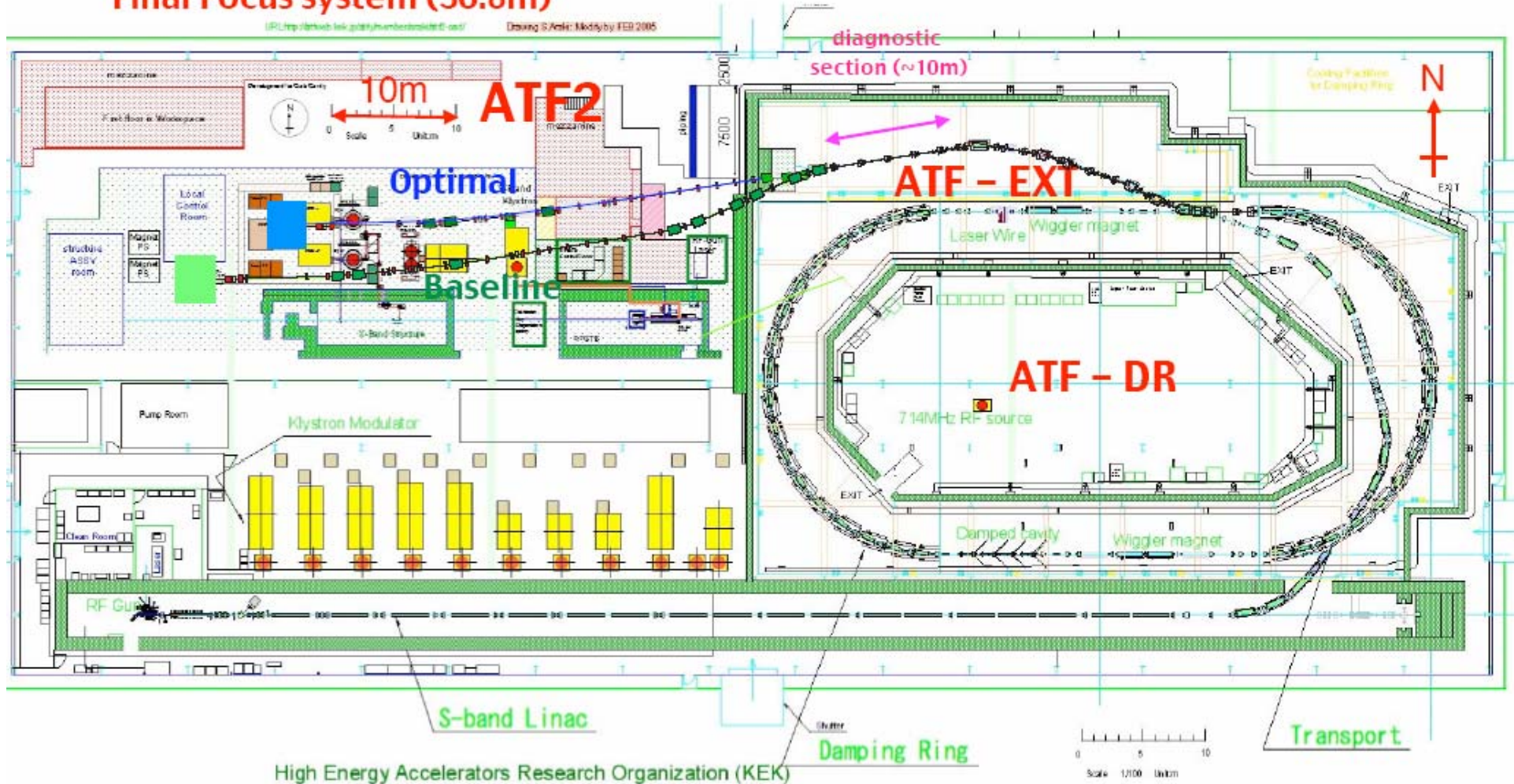
a la Japanese costing rule

"not decided" major components (1.1 Oku-yen)



Optimal Layout

Final Focus system (36.8m)



K. Yokoya – ATF2 funding meeting

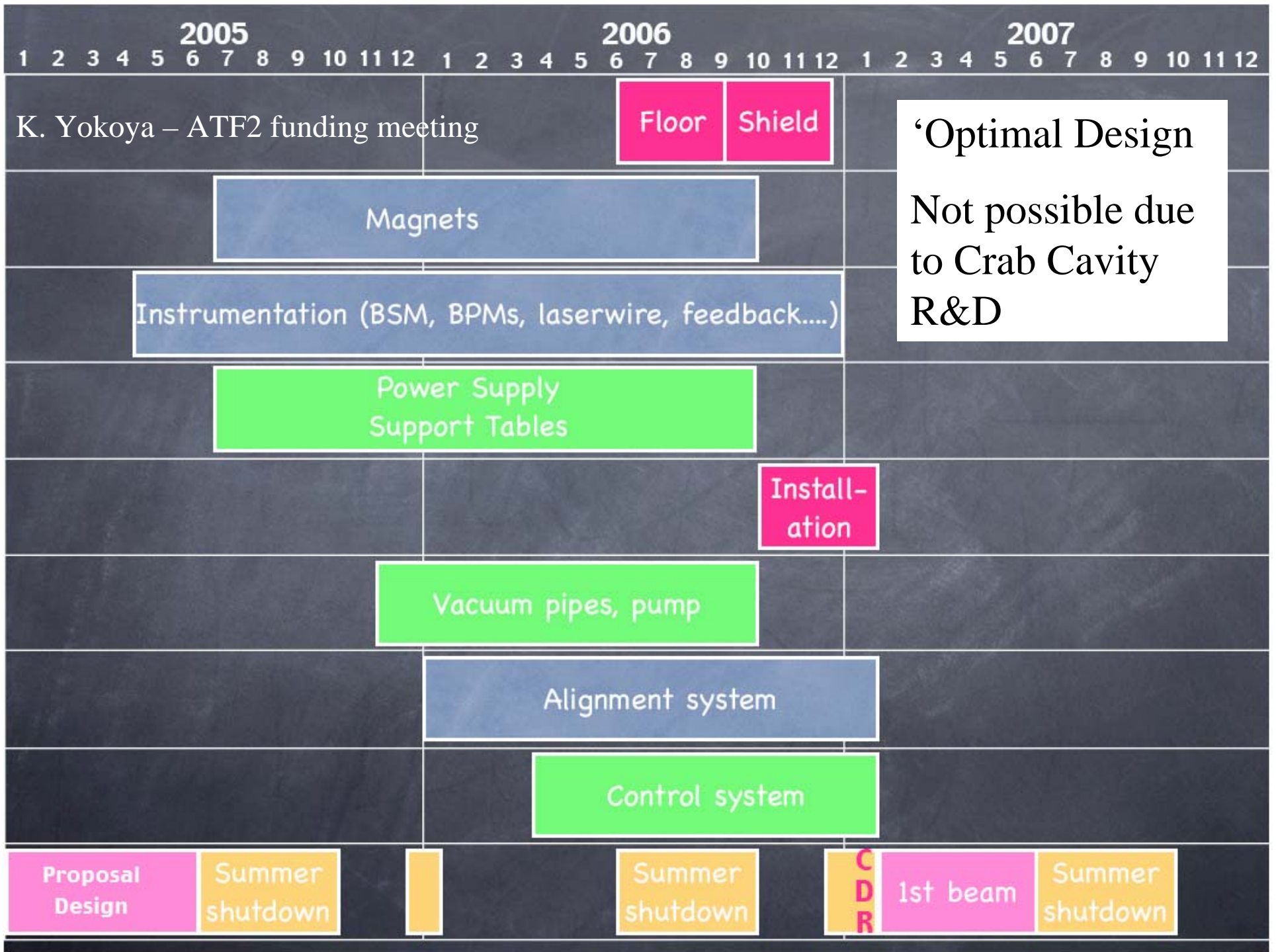
Timeline

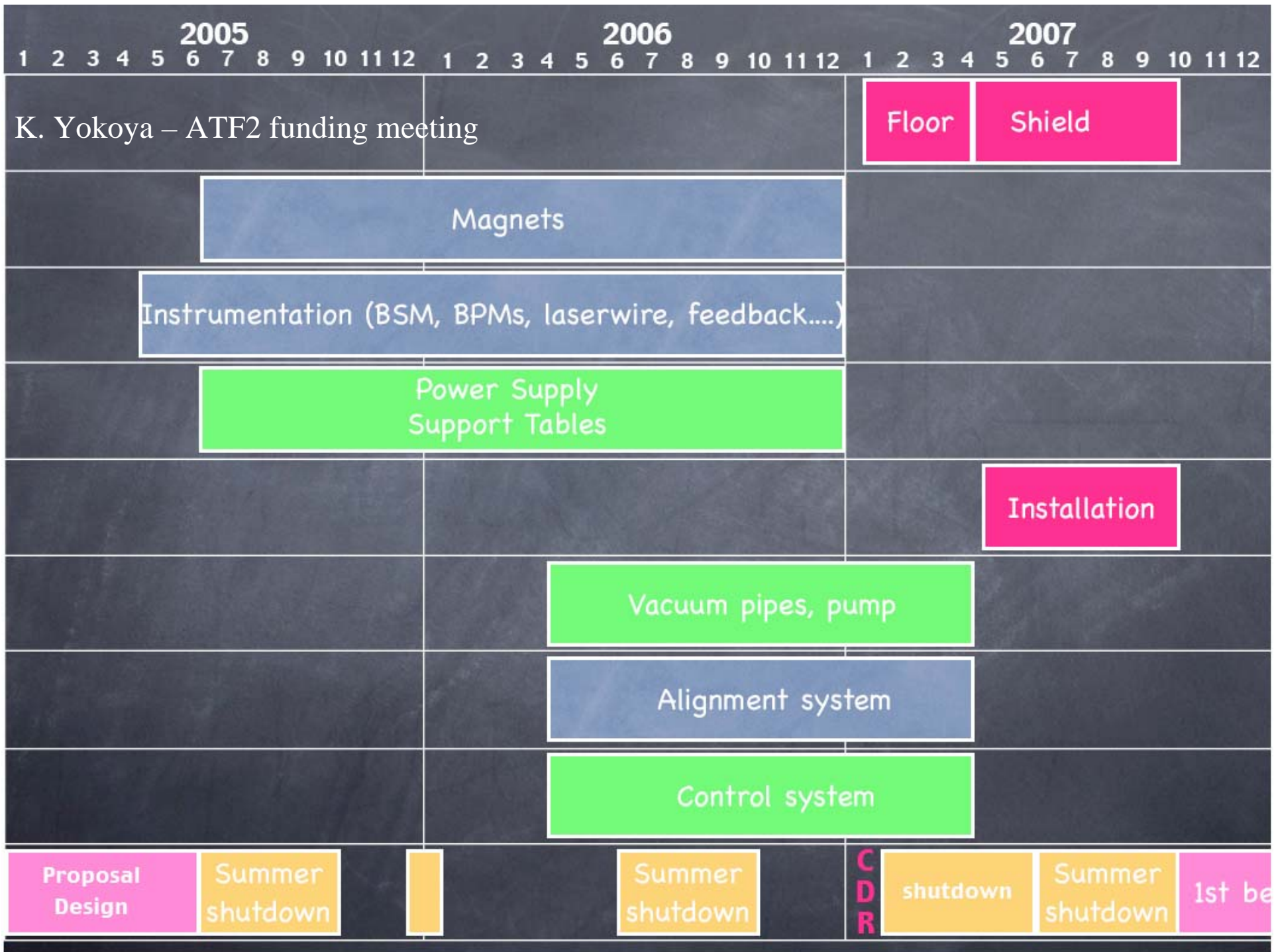
Present Schedule

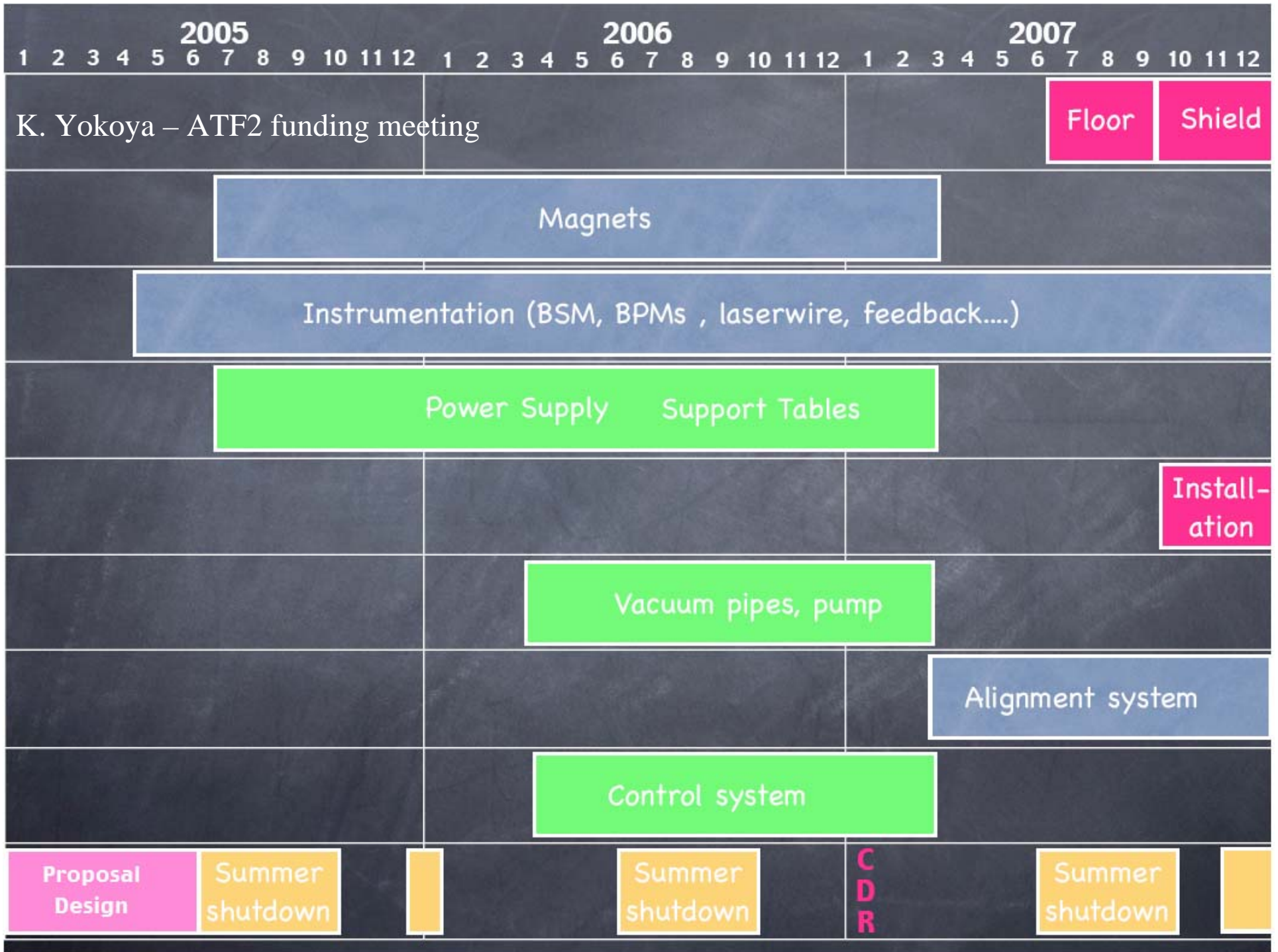
- Floor refurbishment: summer 2006
- Installation : autumn-winter 2006
- Commissioning: Feb.2007

Problems

- Budget: Can we get the budget early enough ?
- Manpower: Aren't the people too busy (e.g., with CDR) ?
- Crab cavity area
 - The baseline layout avoids the carb cavity area
⇒ basically no problem
 - But optimal layout possible if we wait for the evacuation of the area







Comments

- An important R&D facility
 - development of critical diagnostics
 - demonstration of long-term stability
 - (plans to extract ILC-like bunch train time structure from ATF (up to 60 bunches))
 - intra-train feedback studies
 - training camp for ‘new ILC physicists’
 - makes use of already large investment in infrastructure (ATF)
- Some of scope ‘questionable relevance’ to ILC

Comments (cont.)

- International scope unclear
 - KEK clearly wants this to be an ‘International Project’
 - Getting Int. agreement (especially for funding) will take time (delay?)
 - Time scale 3 seems most likely
 - Most KEK people agree.

Comments (cont.)

- DESY's role
 - Will sign MoU to participate
 - Can (should) participate at intellectual level
 - sending people to help with experiments etc.
 - Not clear of possible (if any) commitment during construction phase (critical for funding)
 - possible areas of 'synergy': kicker development; GAN (control system); machine protection (loss monitoring); laser wire;
 - But power supplies, magnets, vacuum components etc. seem to be critical path
- Some consensus on International Involvement requested this year! (By October?)