# Update on SuperB Super Flavor Factory

Marcello A. Giorgi

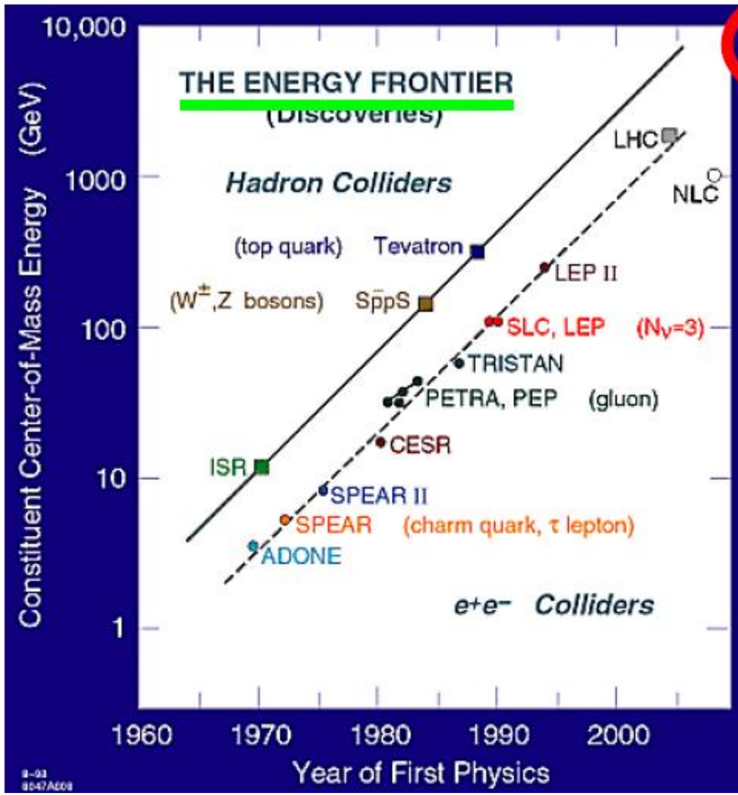
*Pisa 20 Giugno 2011*

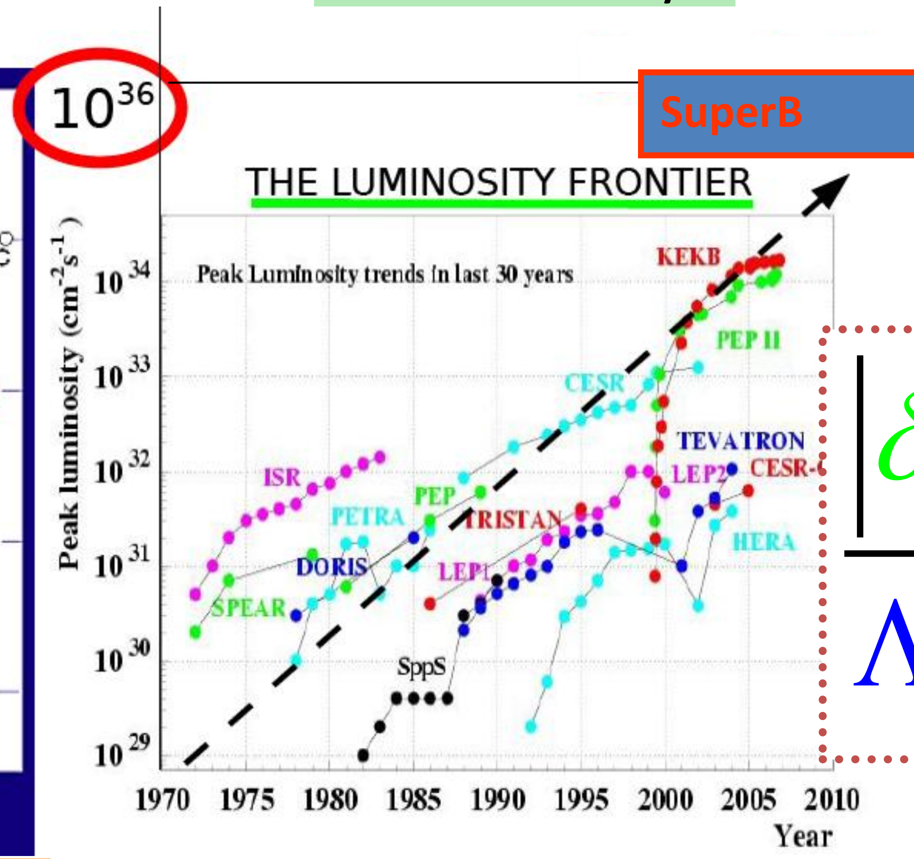
“Relativistic path”

**Crucial : Center-of-mass energy**

“Quantum path”

**Crucial : Luminosity**




$$\frac{\left|\delta_{bq}\right|}{\Lambda_{eff}}$$

The quantum stabilization of the Electroweak Scale suggest that NP is @ ~ 1 TeV
LHC will search on this range

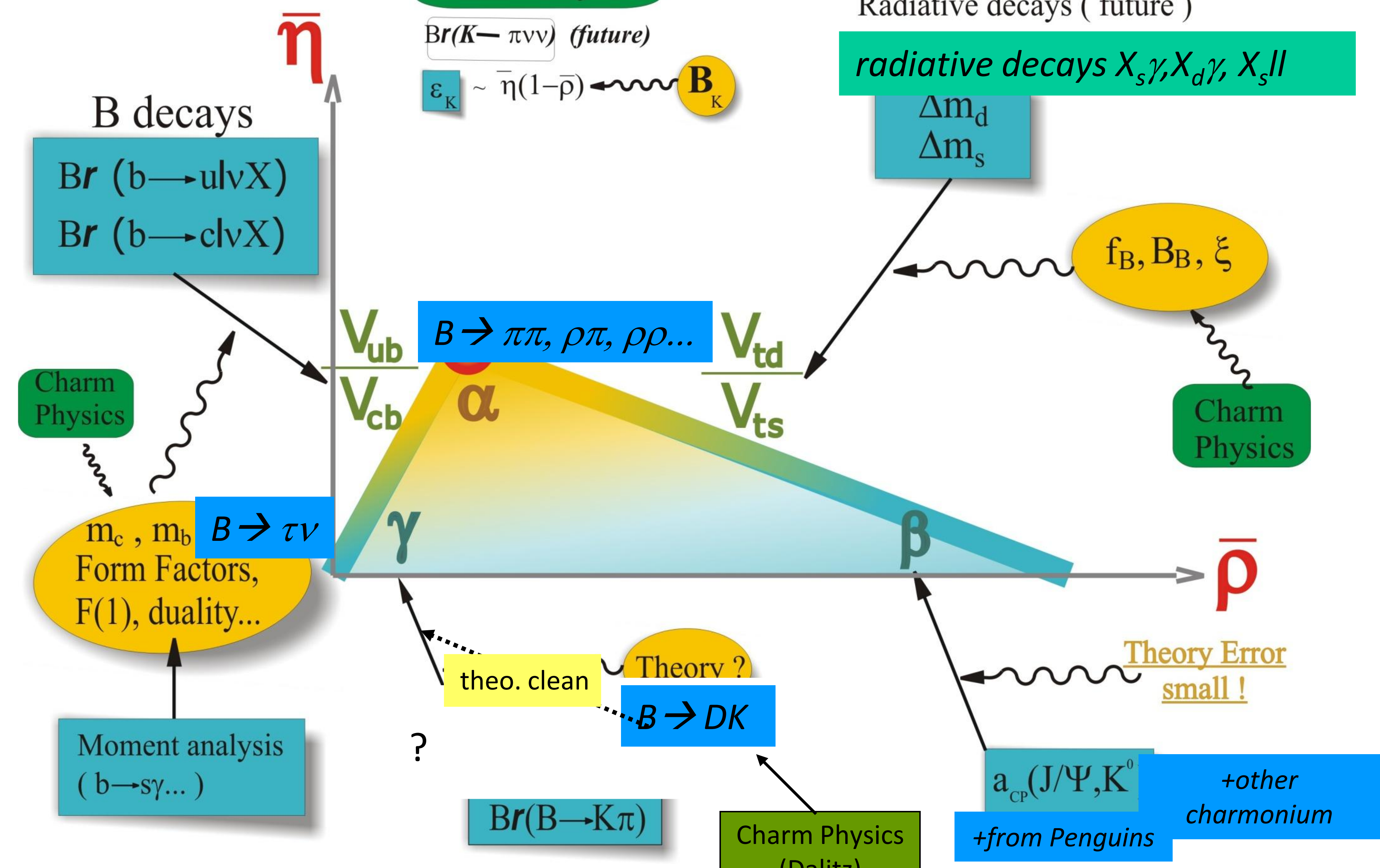
- if NP particles are discovered at LHC we are able to study the flavour structure of the NP
- we can explore NP scale beyond the LHC reach

$10^{34}$ ↔ EW scale ~100GeV

$10^{36}$ ↔ TeV scale

# B Physics

$$V_{ud}V_{ub}^* + V_{cd}V_{cb}^* + V_{td}V_{tb}^* = 0$$

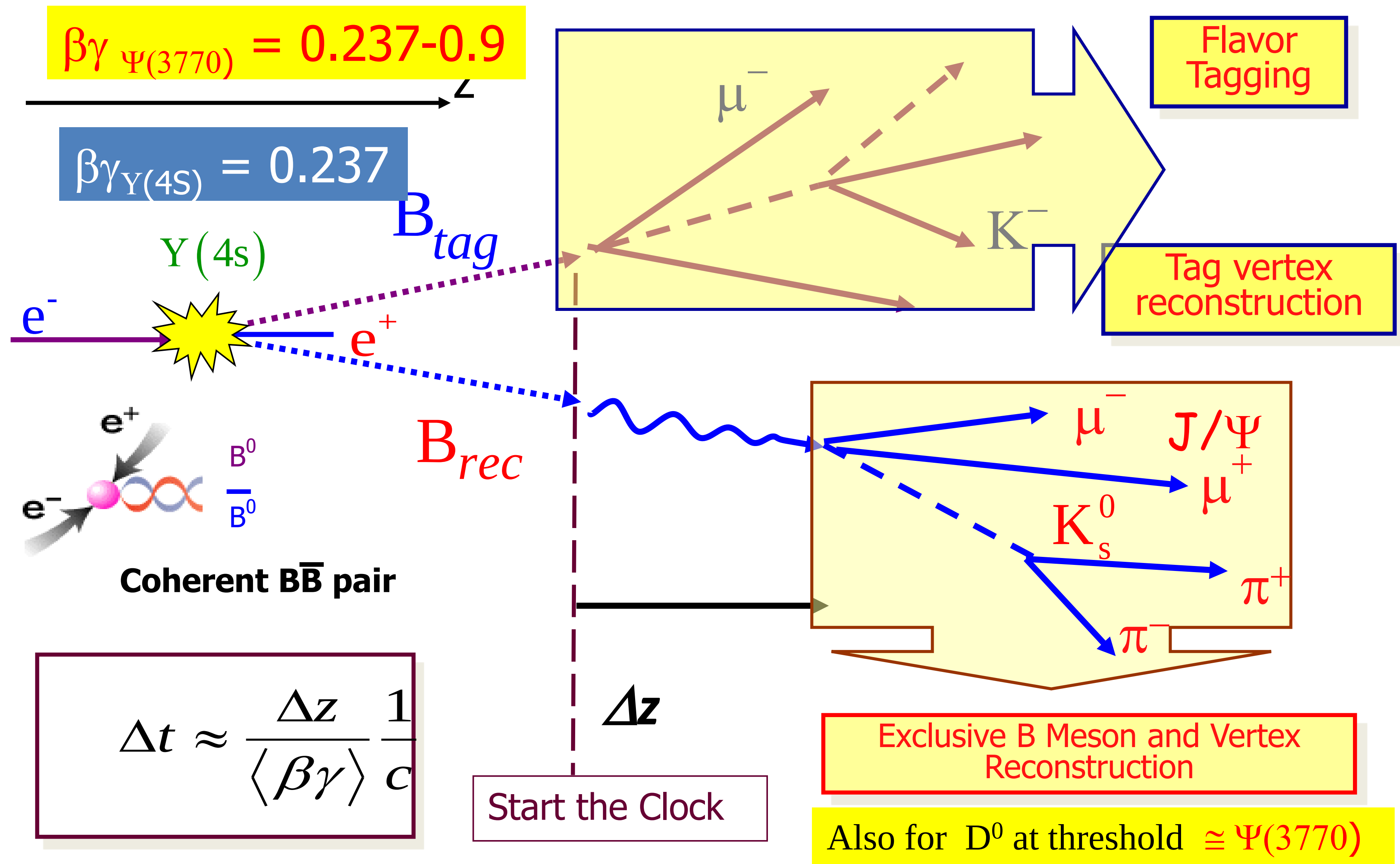



From A.Stocchi talk in Benasque (Sp)-Jan.2011

# $B_{u,d}$ physics: Rare Processes and Precision Measurements

- Goal: Reveal presence of New Physics (NP) using two-pronged attack:
  - Search for **Rare Processes**: NP contributions can be as large as Standard Model ones
    - Large sensitivity to NP
    - Ability to distinguish among NP models
  - Make **Precision Measurements** of many quantities: over constrain the Standard Model predictions
    - NP will often lead to discrepancies in global analyses of measured processes
- SuperB will build on experience of current B-factories.

# Experimental ingredients:for time dependent CP asymmetries using quantum coherence

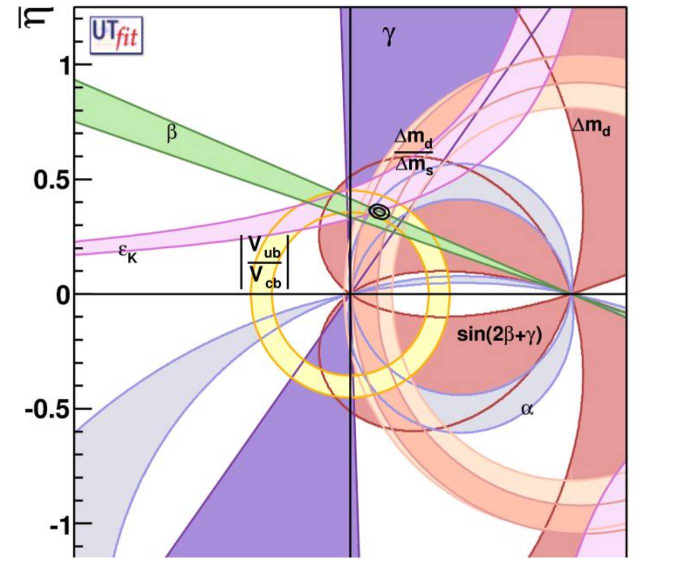


# CKM constraints

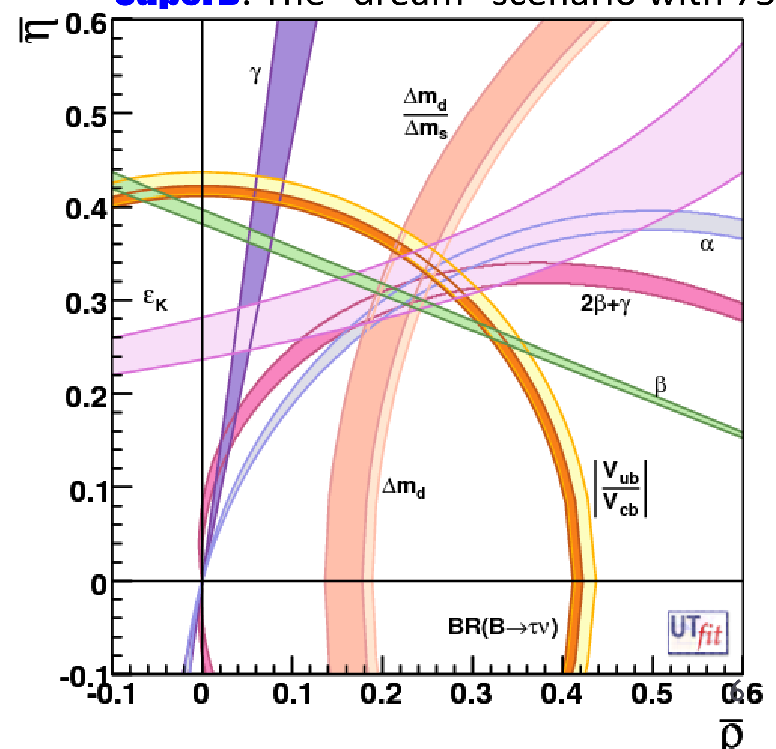
SuperB measures the sides and angles of the Unitarity Triangle (UT)

- Many measurements constrain the sides and angles of the UT: the SM predicts that all measurements “intersect” at apex of the triangle
- When NP is present, the measurements do not yield a unique apex, but you need the high precision of a Super Flavour Factory.

Today:




SuperB: The "dream" scenario with $75 ab^{-1}$



# Charm @ SuperB

- *Run at Υ(4S):* $\mathcal{L} = 10^{36}\ \mathrm{cm}^{-2}\ \mathrm{sec}^{-1};\ \int \mathcal{L}\, dt = 75\ \mathrm{ab}^{-1}$ at the $\Upsilon(4S)$

  βγ=0.238

✓ Large improvement in $D^0$ mixing and CPV: factor 12 improvement in statistical error wrt BaBar (0.5 $ab^{-1}$);
✓ time-dependent measurements will benefit also of an improved (2x) $D^0$ proper-time resolution. [≈1KHz of $c\,\bar{c}$ ]

Unique feature of SuperB

- *Run at ψ(3770):* $\mathcal{L} = 10^{35}\ \mathrm{cm}^{-2}\ \mathrm{sec}^{-1};\ \int \mathcal{L}\, dt = 500\ \mathrm{fb}^{-1}$ at the $\Psi(3770)$

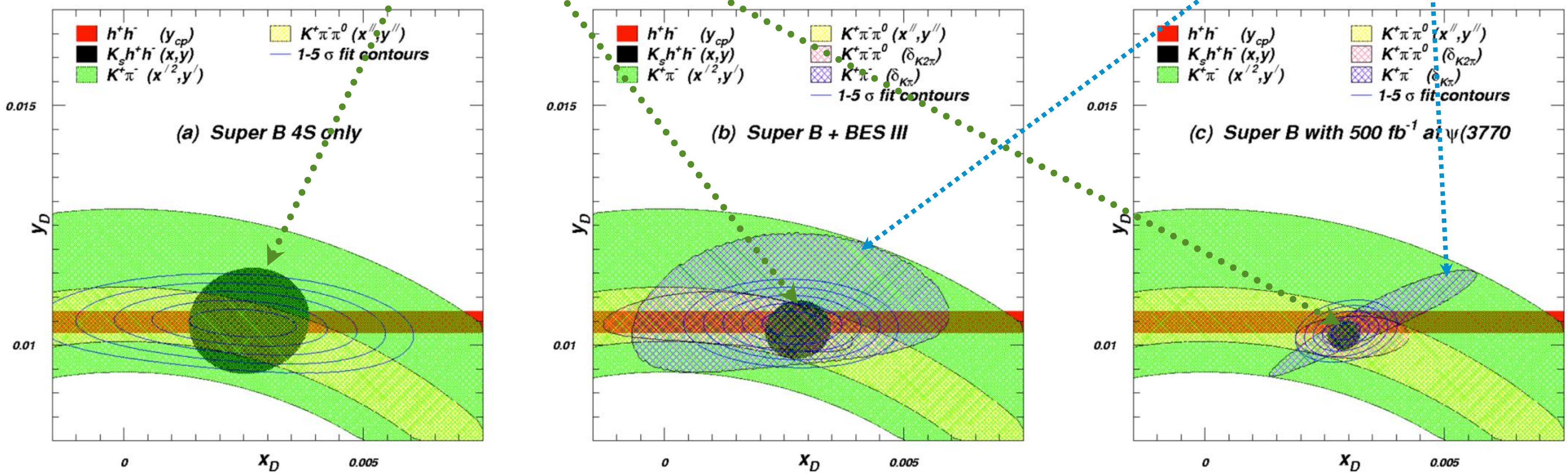
  βγ up to 0.9

✓ $D\bar{D}$ coherent production with 100x BESIII data and CM boost up to βγ=0.9;
✓ almost zero background environment;
✓ possibility of time-dependent measurements exploiting quantum coherence.

- Two improvements in mixing precision come from threshold data:

*CAVEAT: NO TIME-DEPENDENT STUDIES INCLUDED YET*

- Dalitz plot model uncertainty shrinks
- Information on overall strong phase is added



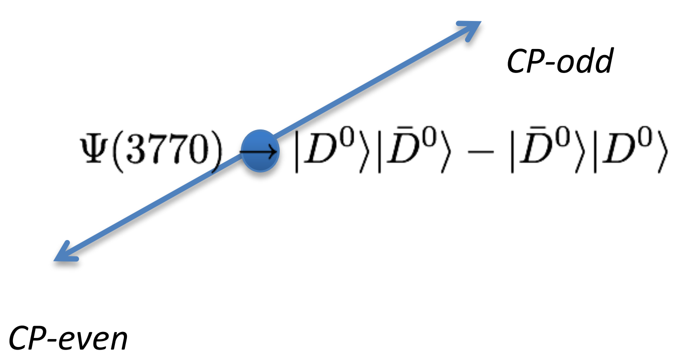

| Fit | $x \times 10^3$ | $y \times 10^3$ | $\delta^\circ_{K^+\pi^-}$ | $\delta^\circ_{K^+\pi^-\pi^0}$ |
|---|---|---|---|---|
| (b) | $xxx^{+0.72}_{-0.75}$ | $xxx \pm 0.19$ | $xxx^{+3.7}_{-3.4}$ | $xxx^{+4.6}_{-4.5}$ |
| Stat. | (0.18) | (0.11) | (1.3) | (2.9) |

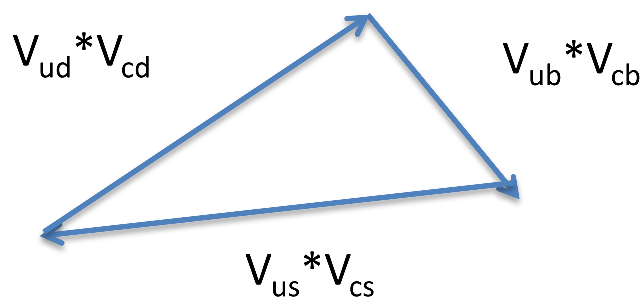
| Fit | $x \times 10^3$ | $y \times 10^3$ | $\delta^\circ_{K^+\pi^-}$ | $\delta^\circ_{K^+\pi^-\pi^0}$ |
|---|---|---|---|---|
| (c) | $xxx \pm 0.42$ | $xxx \pm 0.17$ | $xxx \pm 2.2$ | $xxx^{+3.3}_{-3.4}$ |
| Stat. | (0.18) | (0.11) | (1.3) | (2.7) |

| Fit | $x \times 10^3$ | $y \times 10^3$ | $\delta^\circ_{K^+\pi^-}$ | $\delta^\circ_{K^+\pi^-\pi^0}$ |
|---|---|---|---|---|
| (d) | $xxx \pm 0.20$ | $xxx \pm 0.12$ | $xxx \pm 1.0$ | $xxx \pm 1.1$ |
| Stat. | (0.17) | (0.10) | (0.9) | (1.1) |

# Charm at $D\bar{D}$ threshold

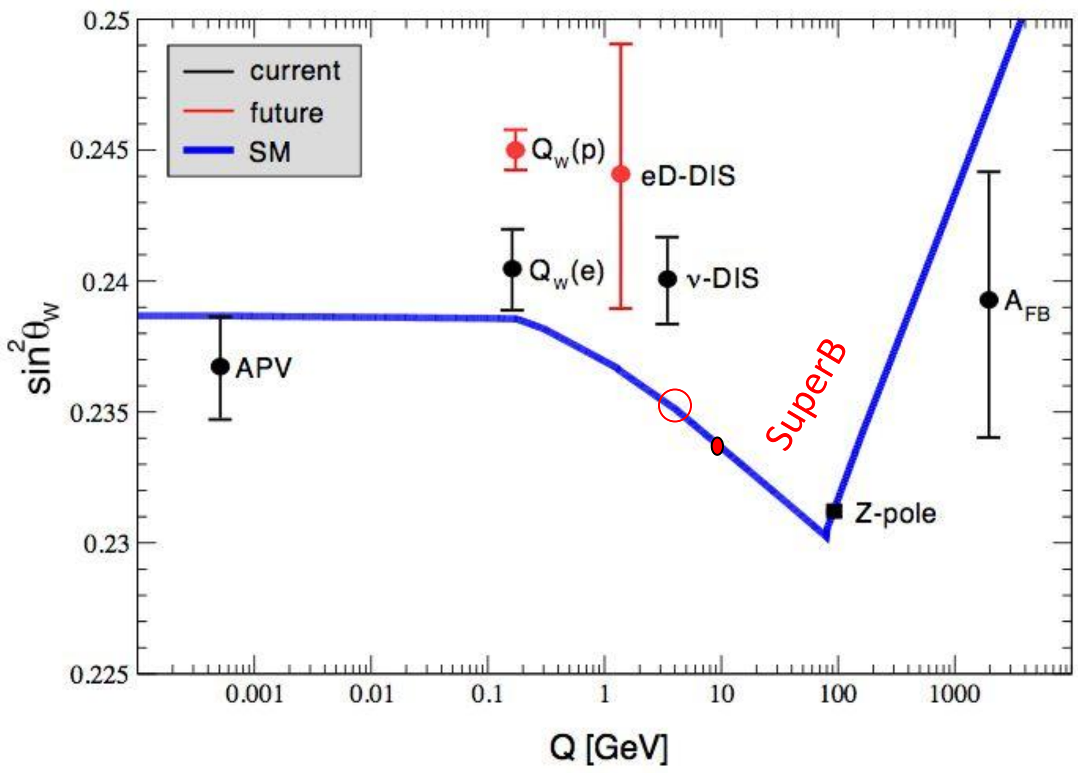
- Almost zero background analyses: search for rare/forbidden decays, precise measurement of relative $D^0$-$\bar{D}^0$ strong phases, search for CPV in wrong sign (WS) semileptonic (SL) $D^0$ decay modes.
- Unique possibilities of time-dependent measurements at $D\bar{D}$ threshold currently under study:
  - coherent production allows time-dependent measurements also withCP-tagged events;
  - CP, T, CPT conservation tests similar to those in $K^0$-$\bar{K}^0$ and $B^0$-$\bar{B}^0$ systems;
  - measure of the unitarity triangle in the Charm sector.



# POLARIZATION:Precision Electroweak

- $\sin^2\theta_W$ can be measured with polarised $e^-$




Measure LR asymmetry in

$$e^+e^- \rightarrow c\bar{c}$$
$$e^+e^- \rightarrow \mu^+\mu^-$$
$$e^+e^- \rightarrow \tau^+\tau^-$$

at the ϒ(4S) to same precision as LEP/SLC at the Z-pole.

Can also perform crosscheck at ψ(3770).

# Is this measurement also possible with Charm?

1. @ Υ(4S) . But hadronization correction.
2. Operate at a ccbar vector resonance above open charm threshold Ψ(3770), use the same analysis method as for b.

Polarization at low energies with high luminosity is needed

**That is included in the SuperB design**

# Many unique quality measurements

Experiment: Red = No Result; Yellow = Moderate Precision; Blue = Precise; Green = Very Precise

Theory: Yellow = Moderately clean; Blue = Clean Need lattice; Green = Clean

| Observable/mode | Current (now) | LHCb (2017) | Super*B* (2021) | LHCb upgrade (') | theory | |
|---|---|---|---|---|---|---|
| $\tau$ Decays | | | | | | |
| $\tau \to \mu\gamma$ | Yellow | Yellow | Green | Yellow | Green | Benefit from polarised e⁻ beam |
| $\tau \to e\gamma$ | Yellow | Yellow | Green | Yellow | Green | |
| $B_{u,d}$ Decays | | | | | | |
| $B \to \tau\nu, \mu\nu$ | Yellow | Red | Blue | Red | Blue | very precise with improved detector |
| $B \to K^{(*)+}\nu\overline{\nu}$ | Red | Red | Green | Red | Green | Statistically limited: Ang. analysis with >75ab$^{-1}$ |
| $S$ in $B \to K^0_S\pi^0\gamma$ | Yellow | Red | Green | Red | Yellow | Right handed currents |
| $S$ in other penguin modes | Yellow | Yellow | Green | Blue | Yellow | SuperB measures many more modes |
| $A_{CP}(B \to X_s\gamma)$ | Blue | Yellow | Green | Yellow | Green | systematic error is main challenge |
| $BR(B \to X_s\gamma)$ | Blue | Yellow | Green | Yellow | Yellow | control systematic error with data |
| $BR(B \to X_s\ell\ell)$ | Yellow | Red | Green | Red | Green | |
| $BR(B \to K^{(*)}\ell\ell)$ | Yellow | Blue | Green | Green | Yellow | SuperB measures e mode well, LHCb does μ |
| $B_s$ Decays | | | | | | |
| $B_s \to \mu\mu$ | Red | Blue | Red | Green | Green | |
| $\beta_s$ from $B_s \to J/\psi\phi$ | Red | Blue | Red | Green | Green | |
| $B_s \to \gamma\gamma$ | Red | Red | Blue | Red | Green | |
| $a_{sl}$ | Red | Red | Green | Red | Green | |
| $D$ Decays | | | | | | |
| mixing parameters | Yellow | Blue | Green | Green | Green | |
| CPV | Red | Blue | Green | Green | Green | Clean NP search |
| Precision EW | | | | | | |
| $\sin^2\theta_W$ at $\Upsilon(4S)$ | Red | Red | Green | Red | Green | Theoretically clean |
| $\sin^2\theta_W$ at Z-pole | Green | Blue | Red | Green | Yellow | b fragmentation limits interpretation |

# Physics Coordination

Physics Coordinators : A.Bevan,M.Ciuchini,M.Rama, J.Walsh
Bd: A. Stocchi,
Bs : A. Drutskoy
Charm: B.Meadows, N.Neri
Tau : A.Lusiani, M. Roney
Spectroscopy& Exotics : R.Faccini, A.Polosa
Interplay : M.Ciuchini,L.Silvestrini
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# REQUIREMENTS FROM PHYSICS

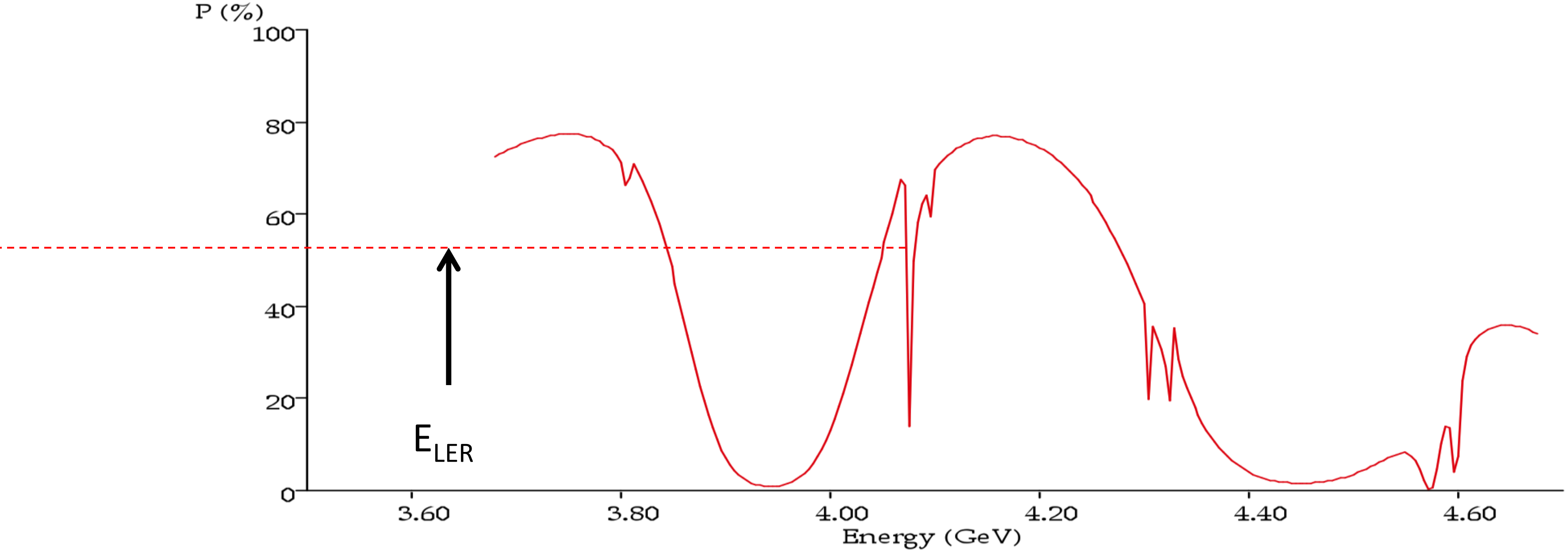
| Parameter | Requirement | Comment |
| --- | --- | --- |
| Luminosity (top-up mode) | $10^{36}$ cm$^{-2}$s$^{-1}$ @ $\Upsilon(4S)$ | Baseline/Flexibility with headroom at 4. $10^{36}$ cm$^{-2}$s$^{-1}$ |
| Integrated luminosity | 75 ab$^{-1}$ | Based on a "New Snowmass Year" of 1.5 x $10^7$ seconds<br>(PEP-II & KEKB experience-based) |
| CM energy range | $\tau$ threshold to $\Upsilon(5S)$ | For Charm special runs (still asymmetric……) |
| Minimum boost | $\beta\gamma$ ≈0.237 ~(4.18x6.7GeV) | 1 cm beam pipe radius. First measured point at 1.5 cm |
| $e^-$ Polarization<br><br>Boost up to 0.9 in runs at low energy under evaluation for charm physics | ≥80% | Enables $\tau$ *CP* and *T* violation studies, measurement of $\tau$ *g*-2 and improves sensitivity to lepton flavor-violating decays. Detailed simulation, needed to ascertain a more precise requirement, are in progress. |

# Future Super B Factories

| | SuperB | Super KEKB |
|---|---|---|
| Peak Luminosity | $>10^{36}$ | $0.8 \times 10^{36}$ |
| Integrated Luminosity | 75 $ab^{-1}$ | 50 $ab^{-1}$ |
| Site | Green Field | KEKB Laboratory |
| Collisions | mid 2016 | 2015 |
| Polarization | 80% electron beam | No |
| Low energy running | $10^{35}$ @ charm threshold | No |
| Approval status | Approved | Approved |

# Polarization resonances

- polarization resonances do constraint the beam Energy choice
- Plot shows the resonances in the energy range of LER
- Beam polarization computed assuming
  - 90% beam polarization at injection
  - 3.5 minutes of beam lifetime (bb limited)
- From this plot is clear that the best energy for LER should be 4.18 GeV → HER must be 6.7 GeV

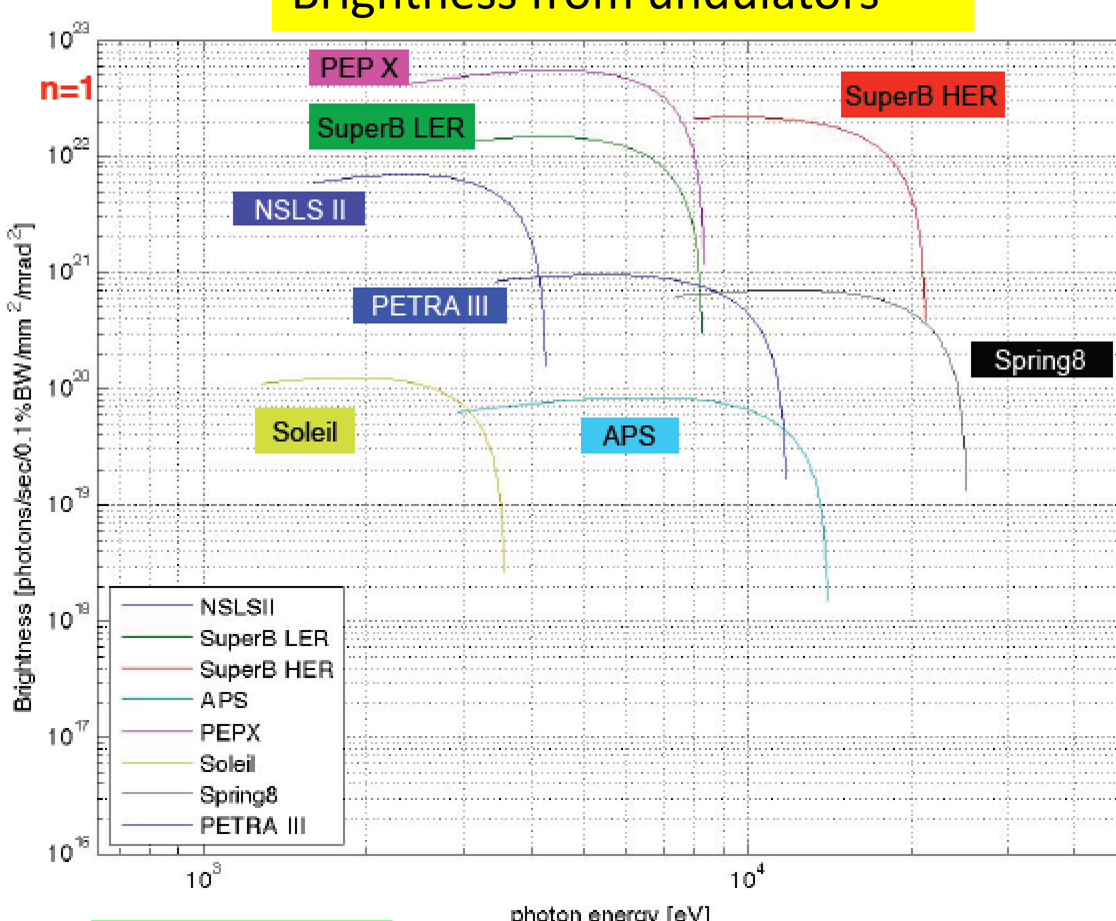


# Synchrotron light options @ SuperB

- Comparison of brightness and flux from undulators for different energies dedicated SL sources & SuperB HER and LER
- Light properties from undulators better than most SL

| Parameters * | SuperB HER | SuperB LER | NSLS II |
|---|---|---|---|
| | IVU20 | IVU20 | IVU20 |
| E [GeV] | 6.7 | 4.18 | 3 |
| I [mA] | 1892 | 2447 | 500 |
| σx [mm] | 60.0 E-3 | 66.5 E-3 | 33.3 E-3 |
| σy [mm] | 2.4 E-3 | 2.6 E-3 | 2.9 E-3 |
| σx' [mrad] | 33.3 E-3 | 37.0 E-3 | 16.5 E-3 |
| σy' [mrad] | 2.1 E-3 | 2.7 E-3 | 2.7 E-3 |
| N [1] | 148 | 148 | 148 |
| λu [mm] | 20 | 20 | 20 |
| Kmax [1] | 1.83 | 1.83 | 1.83 |
| Kmin [1] | 0.1 | 0.1 | 0.1 |

Brightness from undulators

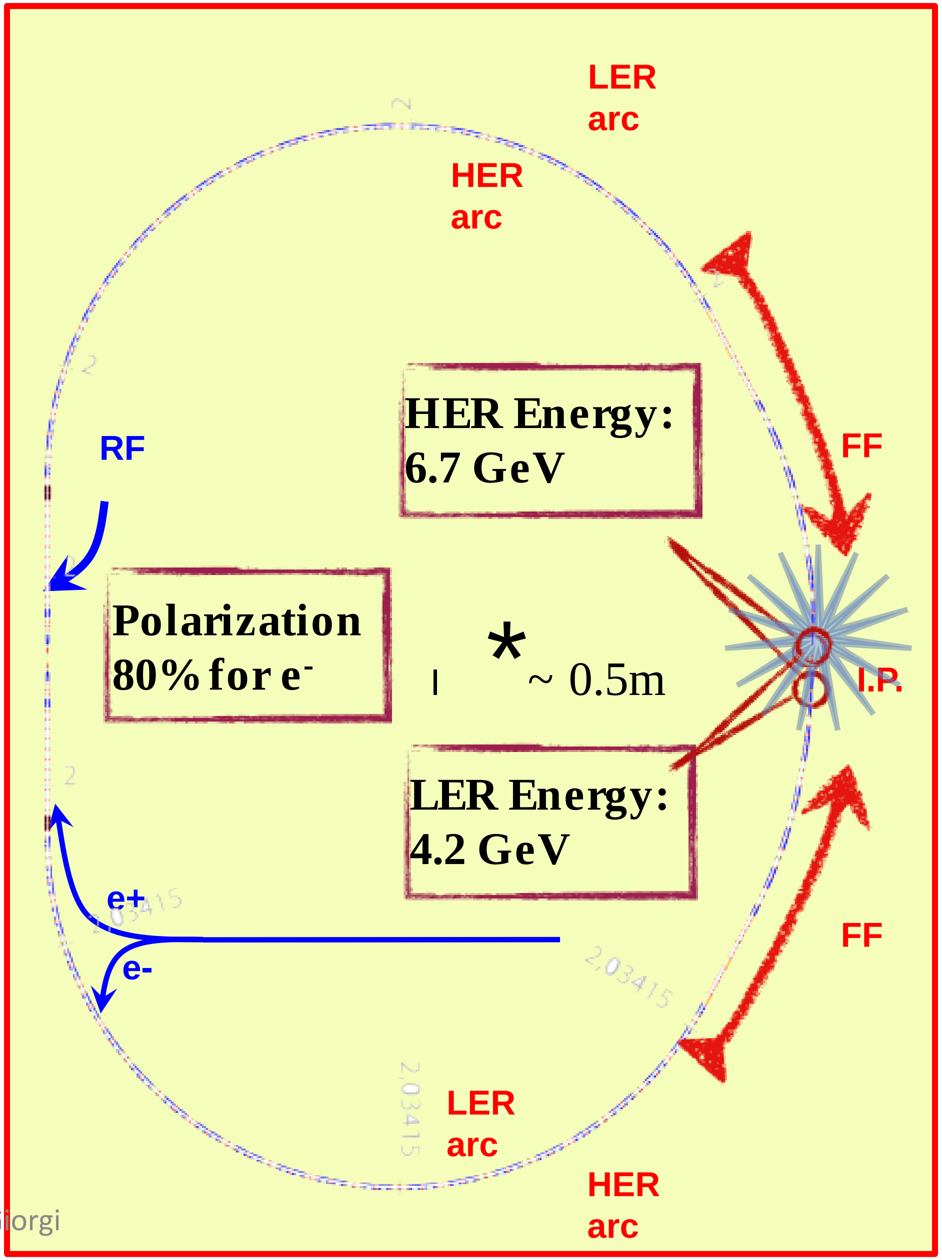



W. Wittmer

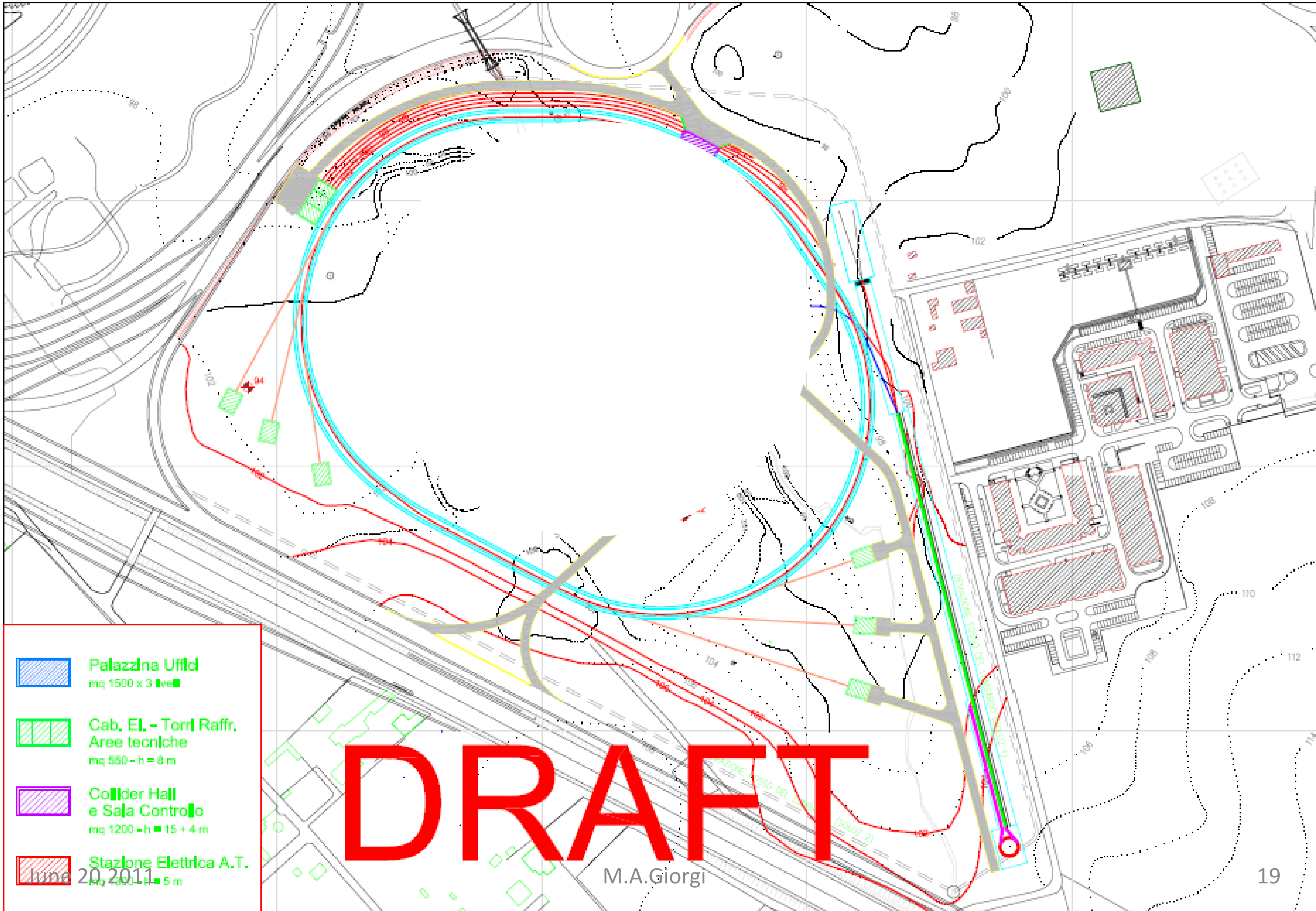
# Collider Parameters are "stable"

| | | Base Line | | Low Emittance | | High Current | | Tau-charm | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Units | HER (e+) | LER (e-) | HER (e+) | LER (e-) | HER (e+) | LER (e-) | HER (e+) | LER (e-) |
| LUMINOSITY | $cm^{-2}\,s^{-1}$ | 1.00E+36 | | 1.00E+36 | | 1.00E+36 | | 1.00E+35 | |
| Energy | GeV | 6.7 | 4.18 | 6.7 | 4.18 | 6.7 | 4.18 | 2.58 | 1.61 |
| Circumference | m | 1258.4 | | 1258.4 | | 1258.4 | | 1258.4 | |
| X-Angle (full) | mrad | 66 | | 66 | | 66 | | 66 | |
| $\beta_x$ @ IP | cm | 2.6 | 3.2 | 2.6 | 3.2 | 5.06 | 6.22 | 6.76 | 8.32 |
| $\beta_y$ @ IP | cm | 0.0253 | 0.0205 | 0.0179 | 0.0145 | 0.0292 | 0.0237 | 0.0658 | 0.0533 |
| Coupling (full current) | % | 0.25 | 0.25 | 0.25 | 0.25 | 0.5 | 0.5 | 0.25 | 0.25 |
| Emittance x (with IBS) | nm | 2.00 | 2.46 | 1.00 | 1.23 | 2.00 | 2.46 | 5.20 | 6.4 |
| Emittance y | pm | 5 | 6.15 | 2.5 | 3.075 | 10 | 12.3 | 13 | 16 |
| Bunch length (full current) | mm | 5 | 5 | 5 | 5 | 4.4 | 4.4 | 5 | 5 |
| Beam current | mA | 1892 | 2447 | 1460 | 1888 | 3094 | 4000 | 1365 | 1766 |
| Buckets distance | # | 2 | | 2 | | 1 | | 1 | |
| Ion gap | % | 2 | | 2 | | 2 | | 2 | |
| RF frequency | MHz | 476. | | 476. | | 476. | | 476. | |
| Revolution frequency | MHz | 0.238 | | 0.238 | | 0.238 | | 0.238 | |
| Harmonic number | # | 1998 | | 1998 | | 1998 | | 1998 | |
| Number of bunches | # | 978 | | 978 | | 1956 | | 1956 | |
| N. Particle/bunch ($10^{10}$) | # | 5.08 | 6.56 | 3.92 | 5.06 | 4.15 | 5.36 | 1.83 | 2.37 |
| $\sigma_x$ effective | μm | 165.22 | 165.30 | 165.22 | 165.30 | 145.60 | 145.78 | 166.12 | 166.67 |
| $\sigma_y$ @ IP | μm | 0.036 | 0.036 | 0.021 | 0.021 | 0.054 | 0.0254 | 0.092 | 0.092 |
| Piwinski angle | rad | 22.88 | 18.60 | 32.36 | 26.30 | 14.43 | 11.74 | 8.80 | 7.15 |
| $\Sigma_x$ effective | μm | 233.35 | | 233.35 | | 205.34 | | 233.35 | |
| $\Sigma_y$ | μm | 0.050 | | 0.030 | | 0.076 | | 0.131 | |
| Hourglass reduction factor | | 0.950 | | 0.950 | | 0.950 | | 0.950 | |
| Tune shift x | | 0.0021 | 0.0033 | 0.0017 | 0.0025 | 0.0044 | 0.0067 | 0.0052 | 0.0080 |
| Tune shift y | | 0.097 | 0.097 | 0.0891 | 0.0892 | 0.0684 | 0.0687 | 0.0909 | 0.0910 |
| Longitudinal damping time | msec | 13.4 | 20.3 | 13.4 | 20.3 | 13.4 | 20.3 | 26.8 | 40.6 |
| Energy Loss/turn | MeV | 2.11 | 0.865 | 2.11 | 0.865 | 2.11 | 0.865 | 0.4 | 0.17 |
| Momentum compaction ($10^{-4}$) | | 4.36 | 4.05 | 4.36 | 4.05 | 4.36 | 4.05 | 4.36 | 4.05 |
| Energy spread ($10^{-4}$) (full current) | dE/E | 6.43 | 7.34 | 6.43 | 7.34 | 6.43 | 7.34 | 6.43 | 7.34 |
| CM energy spread ($10^{-4}$) | dE/E | 5.0 | | 5.0 | | 5.0 | | 5.0 | |
| Total lifetime | min | 4.23 | 4.48 | 3.05 | 3 | 7.08 | 7.73 | 11.4 | 6.8 |
| Total RF Wall Plug Power | MW | 16.38 | | 12.37 | | 28.83 | | 2.81 | |

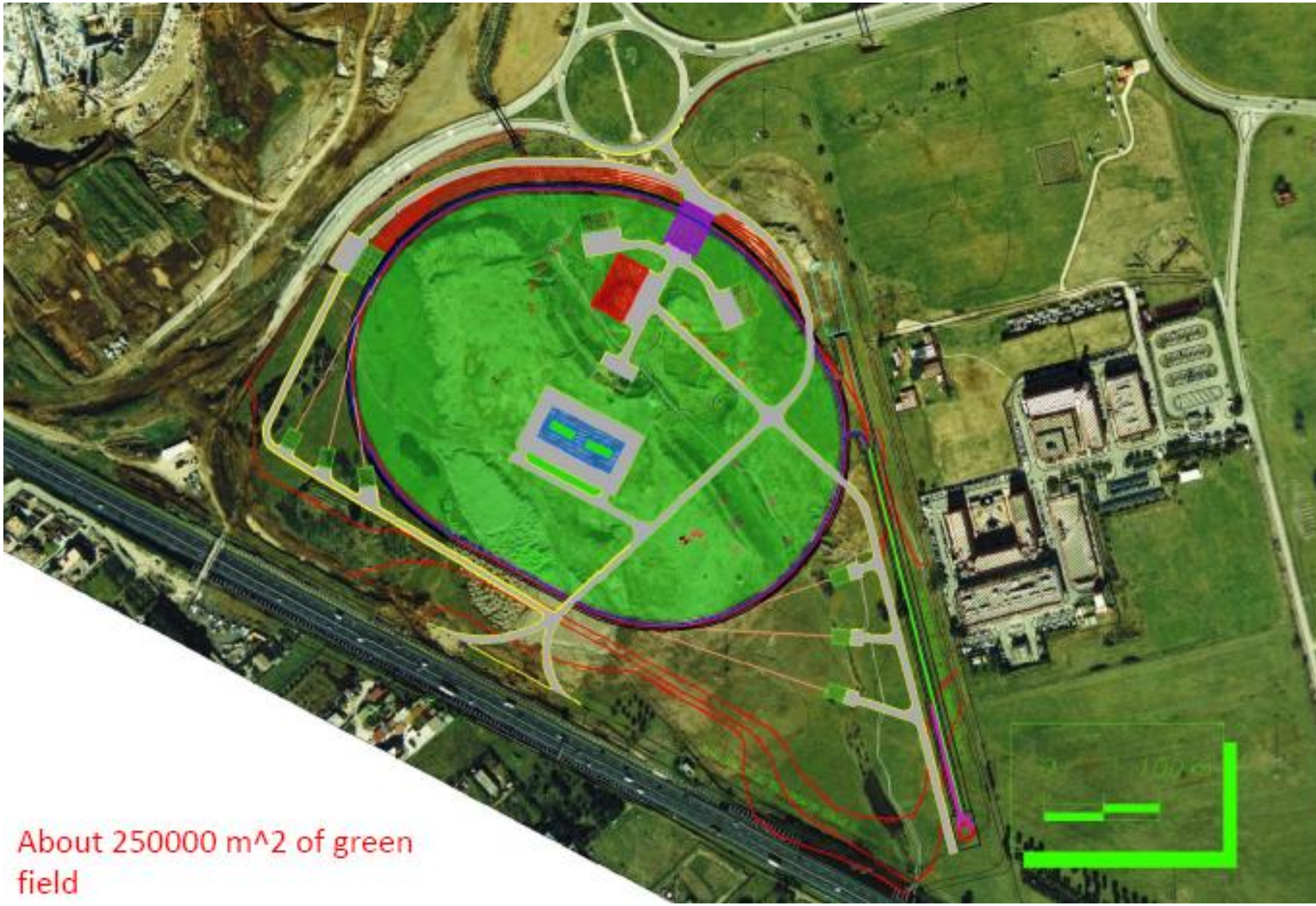
SUPER*B* COLLIDER PROGRESS REPORT



# Possible layout @ Tor Vergata



# Site (Tor Vergata)



# FF vibrations budget

K. Bertsche

- An overall vibration control design is being developed for the FF magnets. The added measurements of the Frascati site are very encouraging and the fact that the beams tend to move together with QD0 motion has significantly loosened the tolerance requirements on cryostat motion

| Element | RMS motion | Xfer Fn | IP displacement | |
|---|---|---|---|---|
| | | | no feedback | with feedback |
| Cryostat linear | < 1 μm | < 0.035 | < 35 nm | < 3.5 nm |
| Cryostat rotation | < 2 μrad | 0.014 m/rad | < 30 nm | < 3 nm |
| Arc quads | < 1 μm | 0.03 | < 30 nm | < 3 nm |
| Total (two rings) | | | < 78 nm | < 7.8 nm |

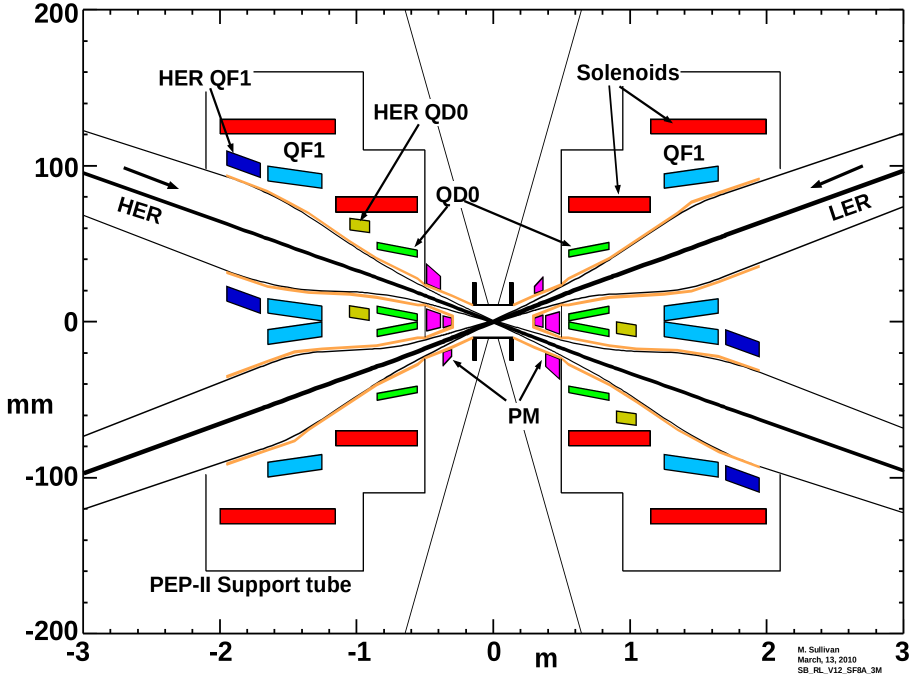
- Assumes beam feedback achieves > 10x reduction of motion at IP
  - If motion is kept 10x smaller, may not need beam feedback
- Budget applies to integrated RMS motion > 1 Hz
- This budget will keep relative motion < 8 nm, and lumi loss < 1%

# Vibrations

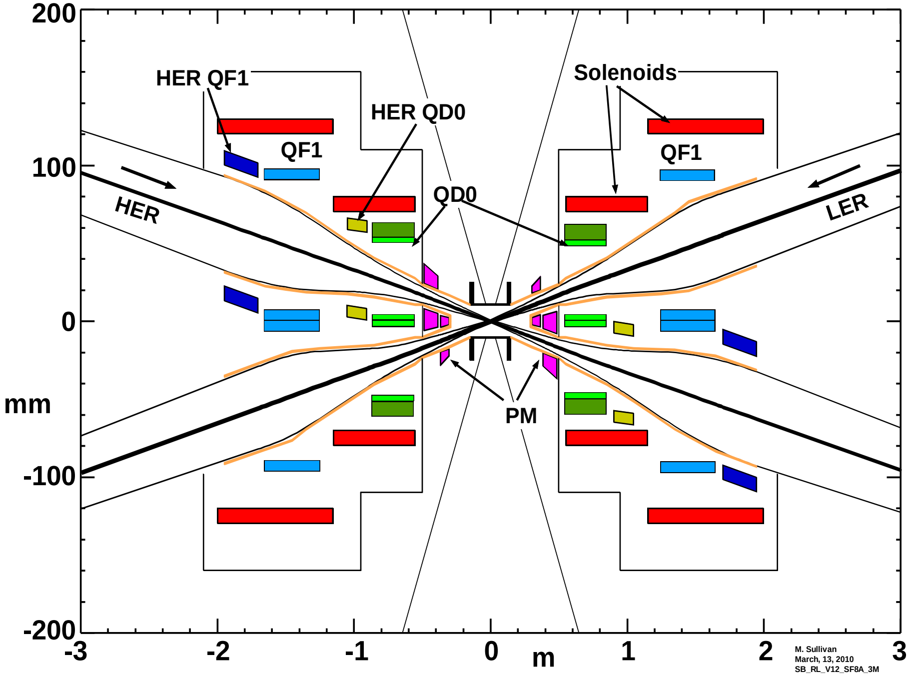
The results of the measurement campaign in Tor Vergata by the Lapp-Annecy Group at the end of April2011 indicates that vibration is not a problem for SuperB even in rush hours.

(Well below 1.0 $\mu$m amplitude)

# Final Quad (QD0) Design: 2 possible choices

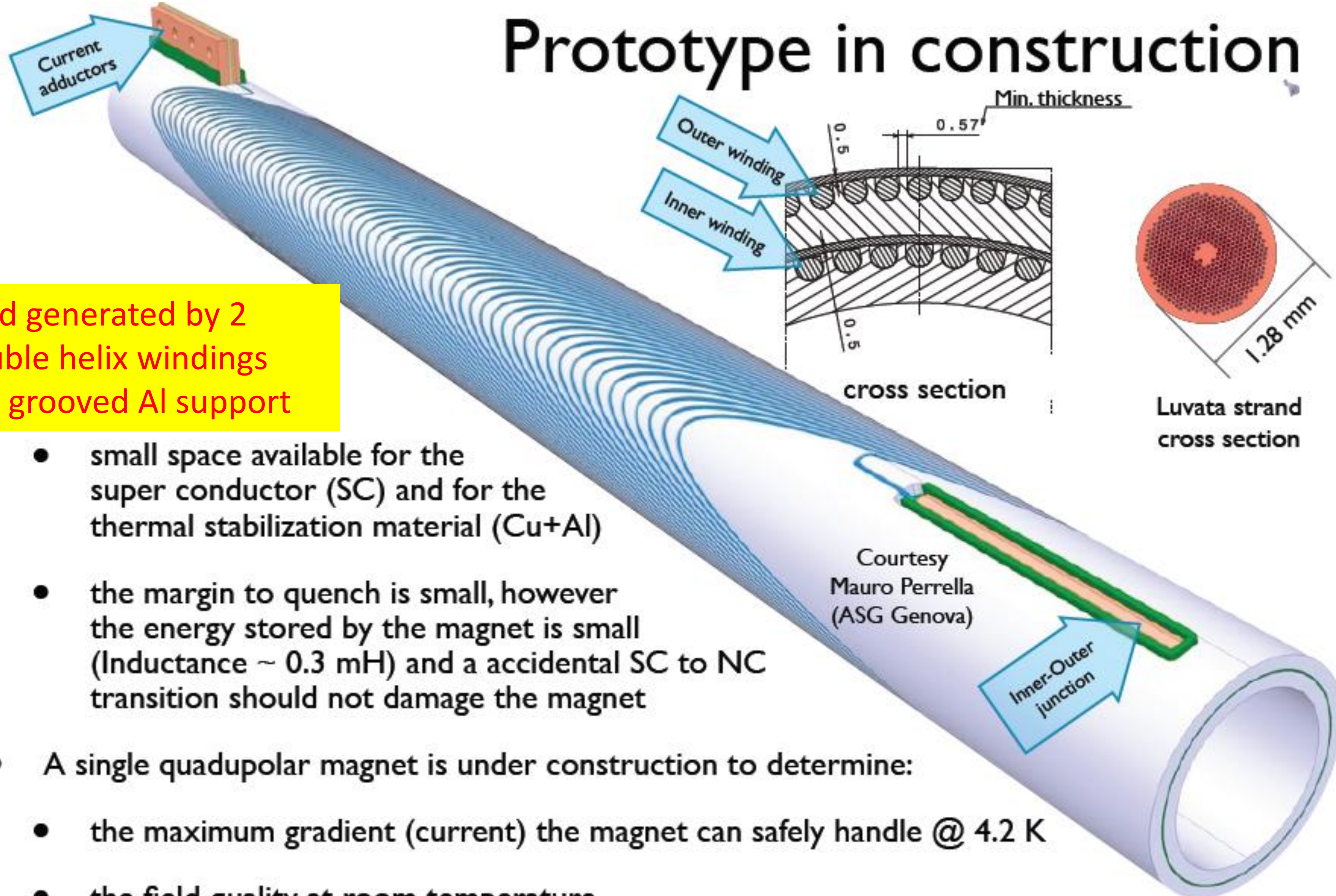



*Vanadium Permendur*
*"Russian" Design*




*Air core SC QD0, QF1*
*"Italian" Design*

# Prototype in construction




cross section

Luvata strand cross section

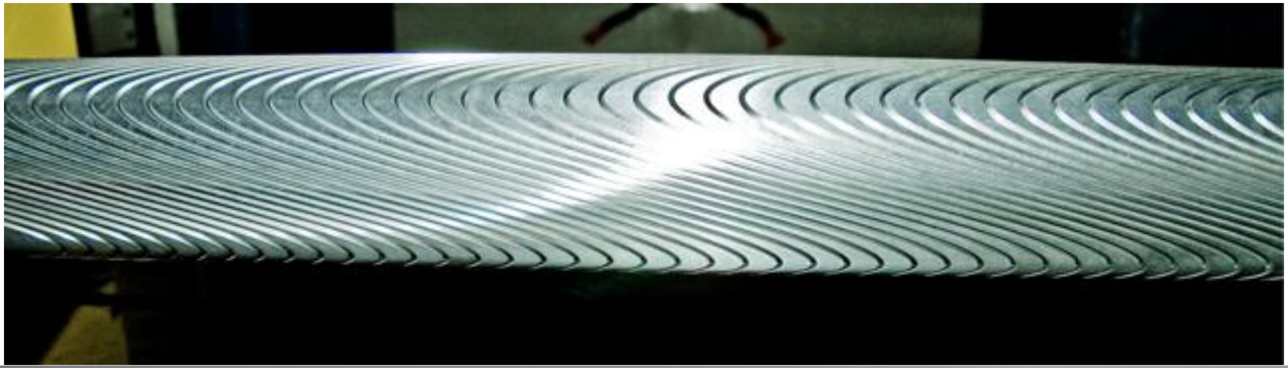
Field generated by 2 double helix windings in a grooved Al support

- small space available for the super conductor (SC) and for the thermal stabilization material (Cu+Al)
- the margin to quench is small, however the energy stored by the magnet is small (Inductance ~ 0.3 mH) and a accidental SC to NC transition should not damage the magnet

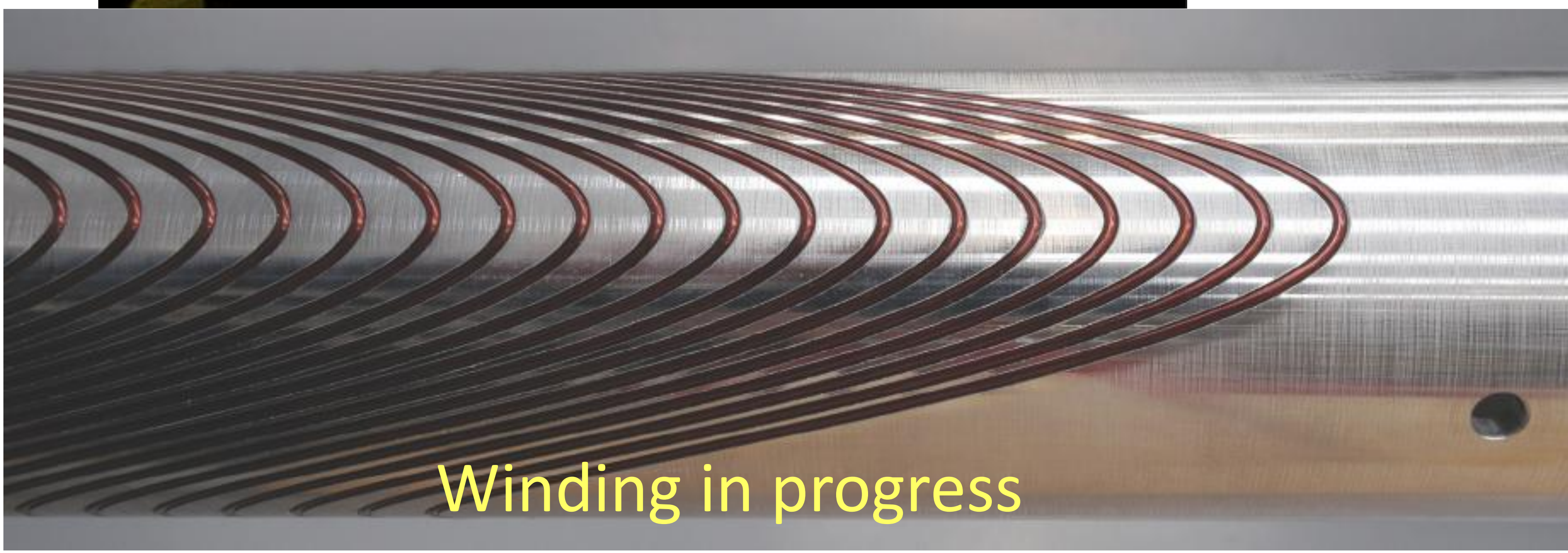
- A single quadupolar magnet is under construction to determine:
  - the maximum gradient (current) the magnet can safely handle @ 4.2 K
  - the field quality at room temperature
- 200 m of SC wire kindly gifted by Luvata: Φ=1.28 mm, Cu/NbTi = 1.0, Ic 2450 A @ 4T, 4.2K

P. Fabbricatore, S. Farinon, R. Musenich (Genova) Paoloni (Pisa)

# The QD0



Grooved Al support

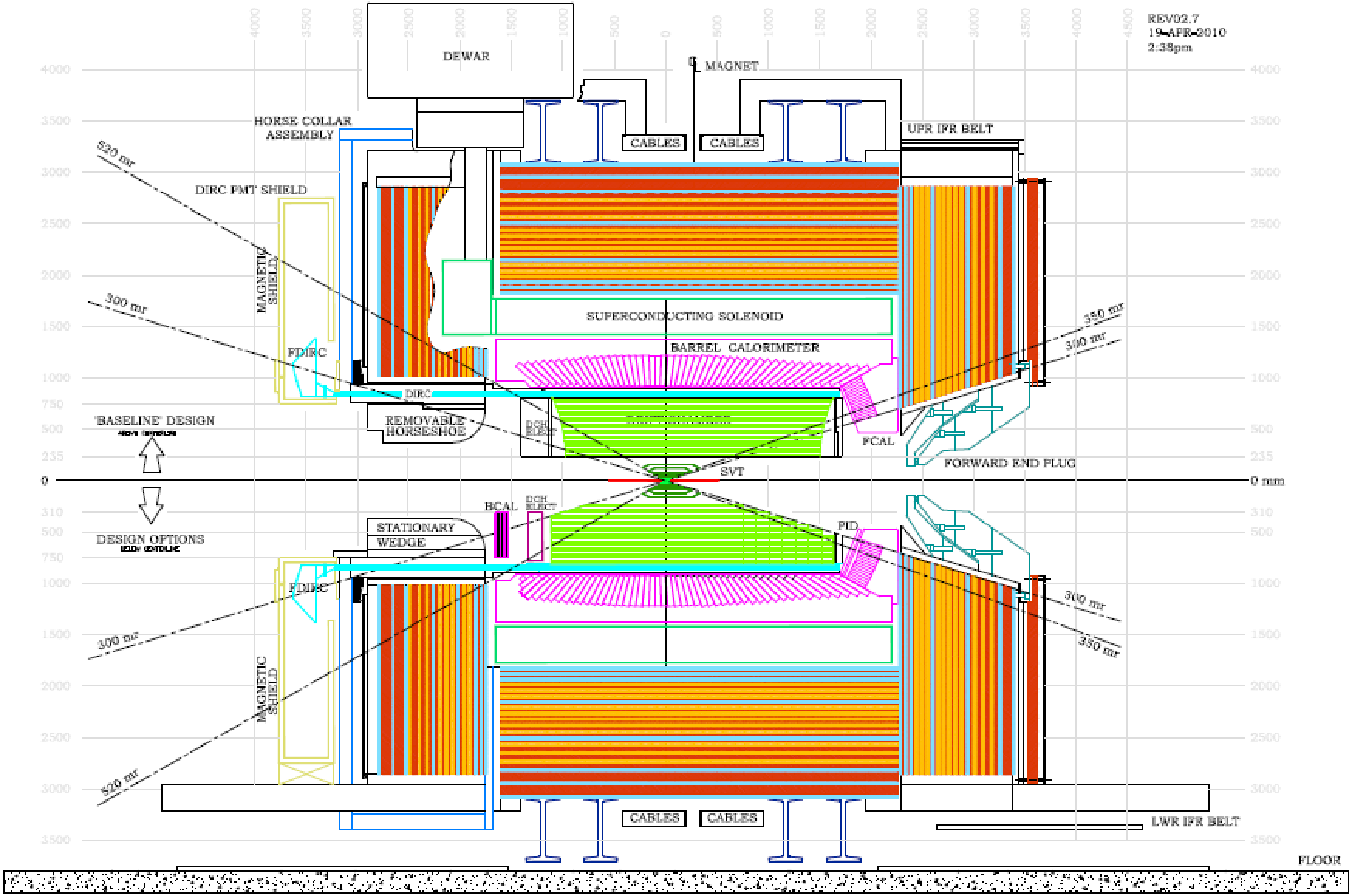



Ready this Summer for tests and field measurements @ CERN

# Detector Overview

- Detector design well advanced
  - Based on BaBar "prototype"
  - CDR (2007) http://web.infn.it/superb/images/stories/upload_file/superb-cdr.pdf
  - Detector Progress Report(2010): http://arxiv.org/abs/1007.4241
- Remaining Generic Detector Options to be decided following Detector Geometry Task Force reports and DGWG studies
- Proto-Detector Organization is in place. Needs to be enhanced/modified as collaboration develops.
- R&D ongoing across detector systems allow final designs to proceed.

# SuperB Detector (with options)



# Detector Evolution- from to

- CDR Baseline based on BaBar. It reuses
  - Fused Silica bars of the DIRC
  - DIRC & DCH Support
  - Barrel EMC CsI(Tl) crystals and mechanical structure
  - Superconducting coil & flux return (with some redesign).
- **Some elements have aged and need replacement. Others require moderate improvements to cope with the high luminosity environment, the smaller boost (4x7 GeV), and the high DAQ rates.**
  - Small beam pipe technology
  - Thin silicon pixel detector for first layer, and a new 5 layer SVT.
  - New DCH with CF mechanical structure, modified gas and cell size
  - New Photon detection for DIRC fused silica bars
  - Possible Forward PID system (TOF in Baseline option)
  - New Forward calorimeter crystals (LYSO).Backward veto
  - Minos-style extruded scintillator for instrumented flux return
  - Electronics and trigger- x100 real event rate
  - Computing- to handle massive date volume

# Background Rates as expected from preliminary studies

| | Cross section | Evt/bunch xing | Rate | Generator |
|---|---|---|---|---|
| Radiative Bhabha | ~340 mbarn ( Eγ/Ebeam > 1% ) | ~850 | 0.3THz | BBBrem |
| $e^+e^-$ pair production | ~7.3 mbarn | ~18 | 7GHz | Diag36 |
| $e^+e^-$ pair (seen by L0 @ 1.5 cm) | ~0.3 mbarn | ~0.8 | 0.3GHz | Diag36 |
| Elastic Bhabha | $O(10^{-4})$ mbarn (Det. acceptance) | ~250/Million | 100KHz | Bhabhayaga/BHwide |
| Υ(4S) | $O(10^{-6})$ mbarn | ~2.5/Million | 1 KHz | |
| | Loss rate | Loss/bunch pass | Rate | |
| Touschek (LER) | 14 kHz / bunch (+/- 2 m from IP) | ~6/100 | ~14 MHz | Star (M.Boscolo) |

- Primary Background Particle will eventually hit the beam pipe showering in the surrounding material
- Ad hoc Monte Carlo generator for primary particles
- Geant4 Based full simulation code for the simulation of the interaction of primary particles with the material

# Proto Technical Coordination

Detector Coordinators – B.Ratcliff, F. Forti
Technical Coordinator – W.Wisniewski

- SVT – G. Rizzo
- DCH – G. Finocchiaro, M.Roney
- PID – N.Arnaud, J.Vavra
- EMC – F.Porter, C.Cecchi
- IFR – R.Calabrese
- Magnet – W.Wisniewski
- Electronics, Trigger, DAQ – D. Breton, U. Marconi
- Online/DAQ – S.Luitz
- Offline SW
  - Simulation coordinator – D.Brown
  - Fast simulation – M. Rama
  - Full Simulation/Computing – F. Bianchi
- Background simulation – M.Boscolo, E.Paoloni
- Rad monitor –
- Lumi monitor –
- Polarimeter -
- Machine Detector Interface –
- Mechanical Integration Team F. Rafelli, W. Wisniewski, System Reps
- Central Electronics Team -
- +DGWG – A. Stocchi, M. Rama
- +Geometry Selection Task Forces- H. Jawahery, W. Wisniewski

# Mechanical integration

- List of reference persons and institutions for the mechanic of the sub detectors.
- Review of the mechanical interfaces.
- Detector and sub detector envelopes.
- Review of transportation equipments.
- Review of installation tooling.
- Service inventory survey.
- Storage area.
- Drawings and documents repository.
- Organization of integration management

F.Raffaelli

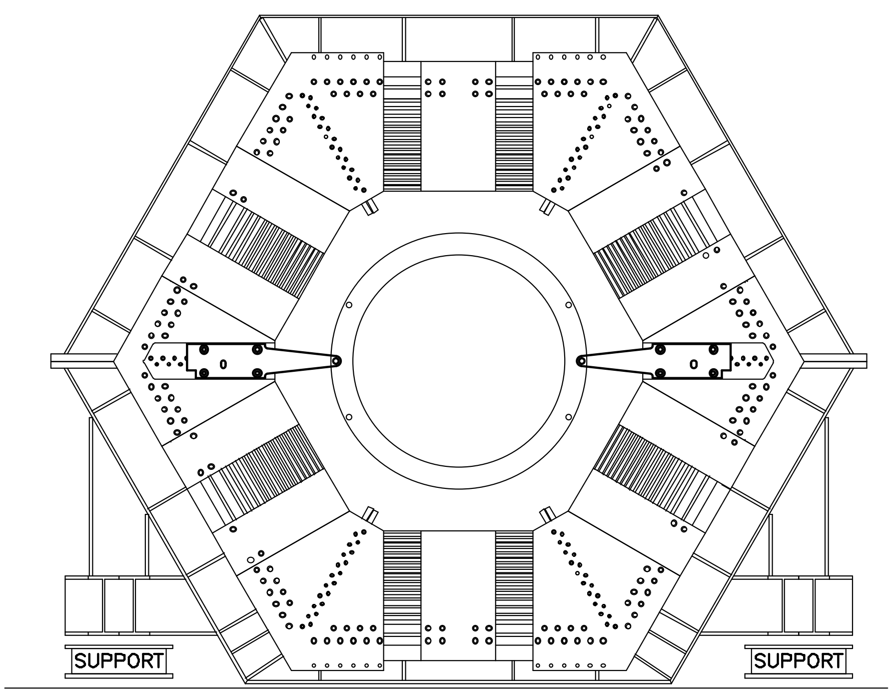
# People and jobs

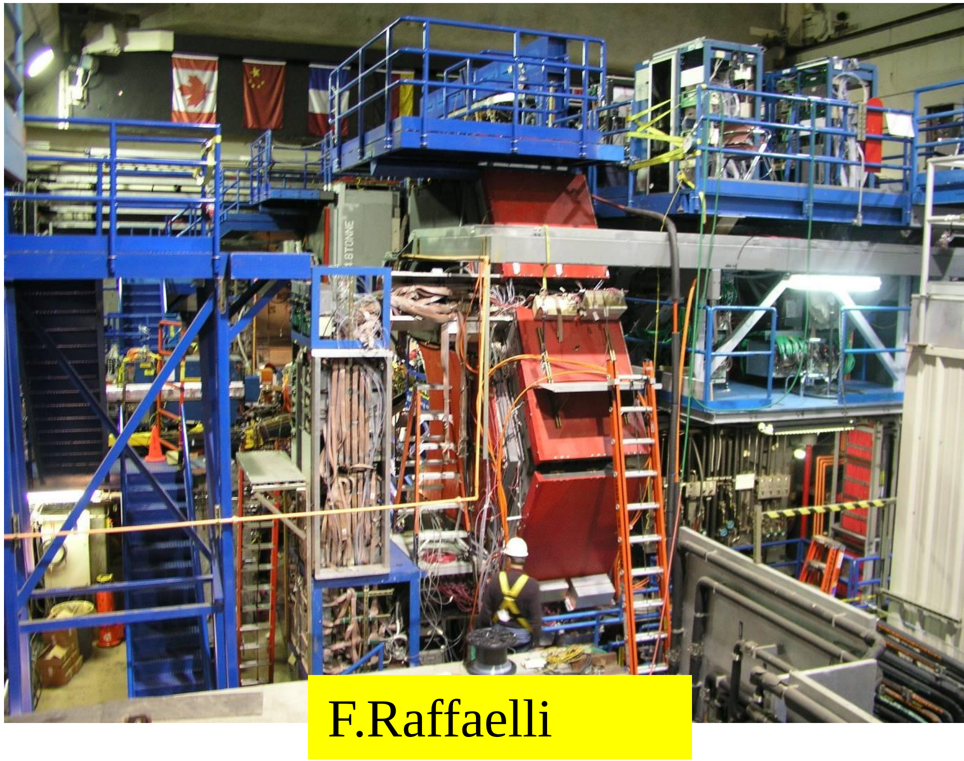
- **IFR** Massimo Benettoni INFN Pd,Vito Carassiti INFN Fe
- **EMC** Corrado Gargiulo INFN Rm1
- **Solenoid Magnet** Pasquale Fabbricatore INFN Ge
- **PID** Massimo Benettoni,INFN Pd(SLAC + Pd+ Ba)
- **DCH** (LNF + INFN Le+ McGill Montreal)
- **SVT** Filippo Bosi INFN Pi, (U.K. (Queen Mary))
- **Forward PID** (between France)
- **Backward IMC**
- **Machine interface**

F.Raffaelli

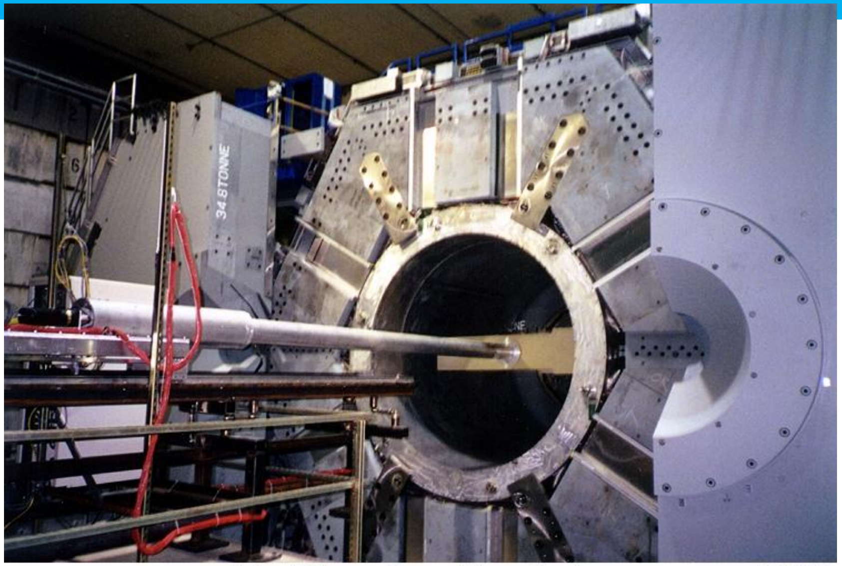
# Whole detector

- The interface with whole detector are the assembly and interaction halls.
- Soon we must define the envelope and total weight of all SuperB detector.
- The contact of SuperB detector with the hall is with the sliding system and the supporting feet. (strategy on positioning)
- The Interaction of the detector with the acceleration is very important because we carry some machine interfaces that requires additional requirements in term of precision, mechanical stability may be more stringent of the detector itself and additional services.

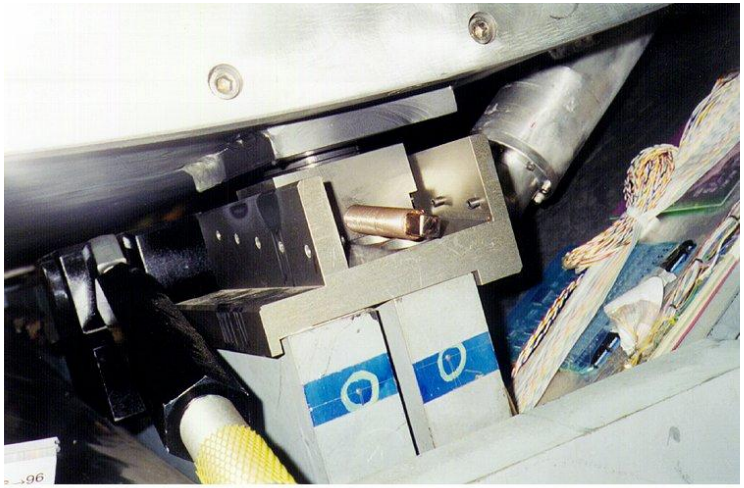


# IFR versus superconducting solenoid



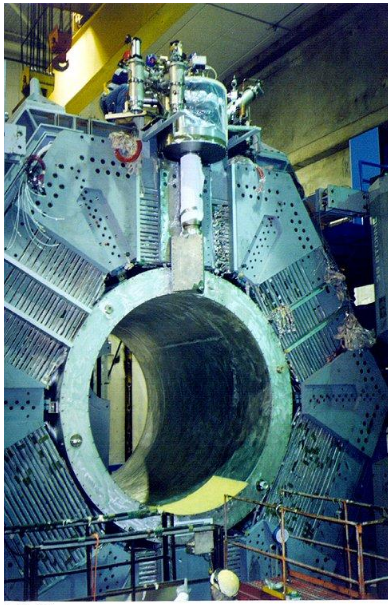

LK_021 Solenoid Mapper (Forward Doors Open) 06/03/98



TO_294 Solenoid Radial Supports 12/12/97


TO_293 Inserting the Solenoid into the Flux Return 12/04/97

The use of a new cryogenic system can have an impact on integration. IFR can have a difference services.



Valve Box Assembly 12/12/97

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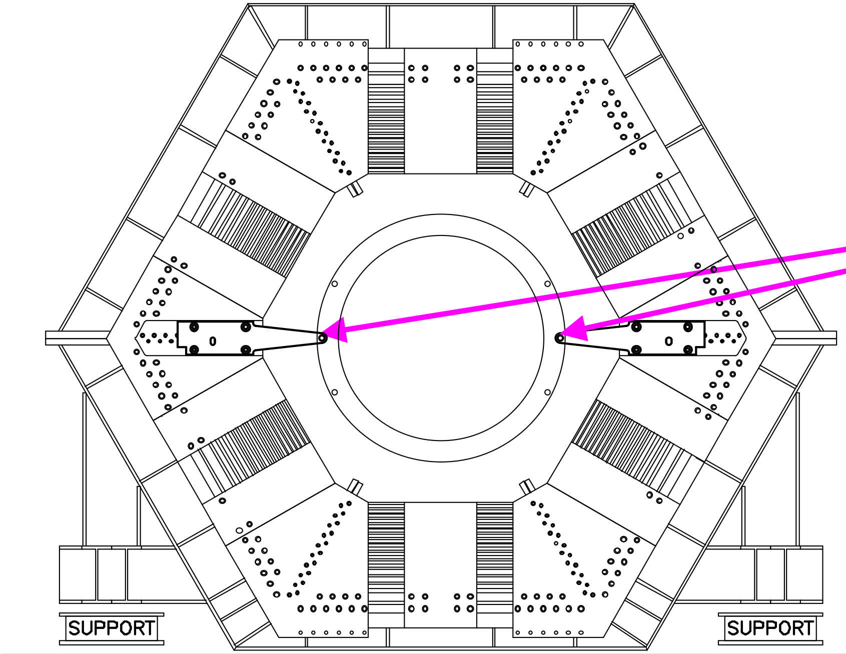
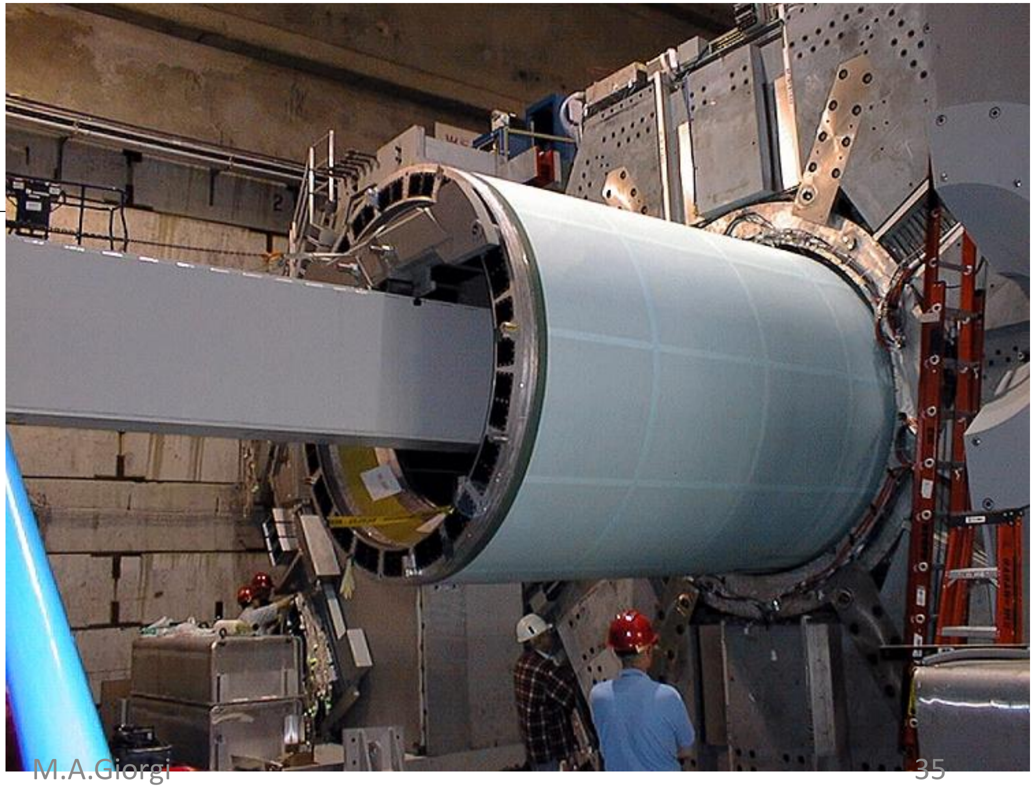
# Super conducting solenoid to EMG




Connection IFR To EMC



Adjustment are build on the connection

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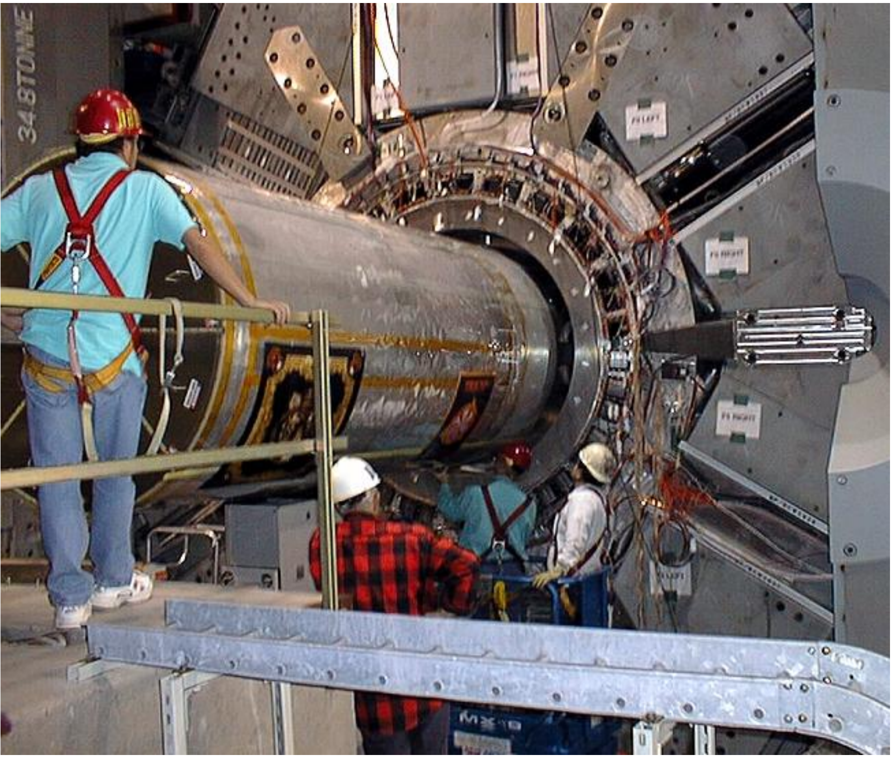
# EMG to DCH

A new chamber could have the same interface with the EMC, if this is satisfactory.



# Mechanical interface.

- Whole detector in the collision hall.
- IRF versus superconducting solenoid.
- Super conducting solenoid to EMC.
- EMC to DCH.
- DHC to SVT.
- SVT to machine interface.
- DHC to SVT and SVT to the machine.
- Fit services of IFR- Super conducting solenoid in the same space as Babar

F.Raffaelli

# Dismounting activity

- The last item to be dismounted is the IFR. Starting the disassembly beginning of July.
- It should be very important to attend to all phase of the operation because we can learn the mounting procedure in detail.
- Right now we base our knowledge on photographic archive.
- From this photographic archive we can get and idea of the connection between the various elements.

F.Raffaelli

# In Preparation of TDR

INFN/AE_10/2, LAL-1

SuperB
Progress Reports

Physics

arXiv:1008.1541v1

SuperB
Progress Reports

The Collider

arXiv:1007.4241

SuperB
Progress Reports

Physics
Accelerator
Detector

arXiv:1009.6178v1

SuperB Progress Reports have been published, it was an important step forward to the completion of the TDR before 2012.

Machine parameters are fixed including the tunnel length .

MAC expected by end 2011.

A new Physics Comparison Document ready by July 1, 2011.

# The XVII SuperB Workshop and Kick off Meetiing

## Meeting schedule

Kick off Day

| May – June 2011 | | | | | | |
|---|---|---|---|---|---|---|
| Sa | Su | Mo | Tu | We | Th | Fr |
| 28 | 29 | 30 | 31 | 1 | 2 | 3 |

Arrival

Working Sessions

End Working Sessions

1st Departure

2nd Departure

Det. Board
Accel. Board
Project. Board
Steering Committee

| | |
|---|---|
| 11:00 | PLENARY |
| SML | KICK-OFF DAY |
| 30 | Status of the SuperB Project (R.Petronzio) |
| 30 | SuperB e il Piano Nazionale della Ricerca (A.Agostini) |
| 30 | SuperB nel Campus dell'Università di Tor Vergata (P.Masi) |
| 30 | SuperB as High Brilliance Light Source (E. Di Fabrizio) |
| 13:30 | *Lunch - Fuoco di Bosco* |
| 15:30 | PLENARY |
| SML | KICK-OFF DAY |
| 30 | The European Strategy Session and the New Particle Physics Roadmap (S. Stapnes) |
| 30 | Super Flavour Collires and ECFA (T. Nakada) |

# KICK-OFF DAY

| Tuesday,May 31, 2011 | |
|---|---|
| 15.30 | Special MINI-PLENARYY |

| | | |
|---|---|---|
| 17:00 | The LHC(B) Discovery Potential (20') ( Slides ) | Guy Wilkinson (*University of Oxford*) |
| 17:20 | The Super-KEKB and Belle-II Projects (20') ( Slides ) | Peter Krizan (*Ljubljana Univ. and J. Stefan Institute*) |
| 17:40 | The BINP Super Tau-Charm Factory (20') ( Slides ) | Vladimir Druzhinin (*BINP, Novosibirsk, Russia*) |
| 18:00 | The BES-III Project (20') ( Slides ) | Hai-Bo Li |

| | |
|---|---|
| 18:45 | PLENARY |
| SML | Experiment Collaboration Forming |