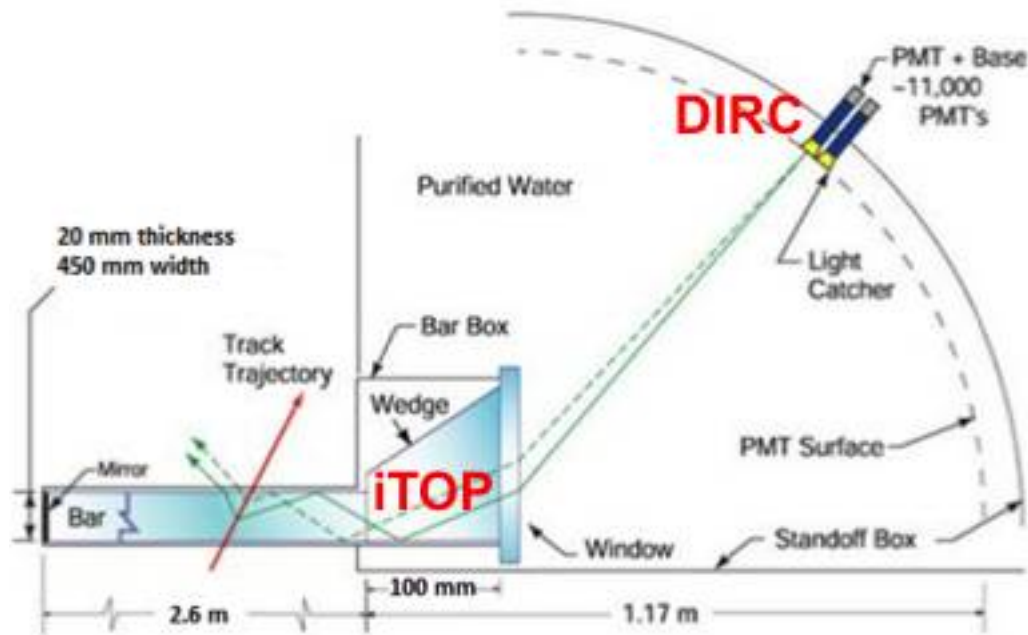
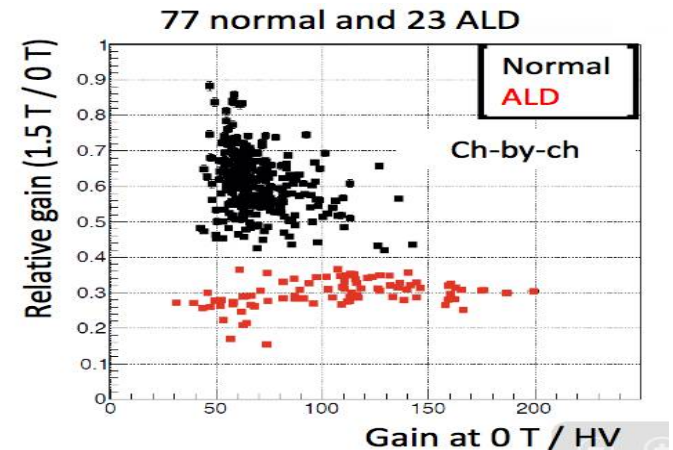
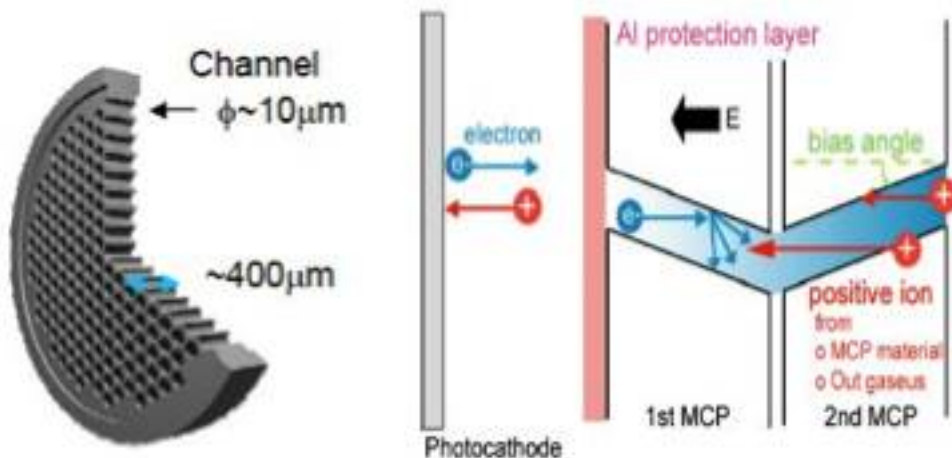


Barrel PID: imaging Time Of Propagation (iTOP)



L' iTOP è un nuovo tipo di rivelatore Cherenkov in cui l'immagine viene ricostruita in uno spazio di 100 mm (10 volte meno rispetto al DIRC di Babar) grazie ad una combinazione tra elevata risoluzione temporale (tradotta in spazio) ed utilizzo di fotomoltiplicatori a microcanali (MCP-PMT)

Vengono utilizzati fotomoltiplicatori a microcanale di ultima generazione ALD MCP-PMT in cui uno strato protettivo del fotocatodo permette di aumentare il tempo di vita dei PMT di un fattore pari a circa 5... **ma maggiore gain reduction a alto B:**



Produzione PMT

5/2014 Hamamatsu termina la fornitura dei 512 MCPPMT (+ 12% spares)

293 MCPPMT di tipo standard sono già stati prodotti e testati.
282 sono di tipo ALD (test in progress)

44 MCP-PMT verranno usati per test di invecchiamento.
Nagoya sta rinegoziando il contratto per avere un numero maggiore di spares.
Increased bkg estimate → BPAC raccomanda di mettere TUTTI ALD-MCPPMT durante l'hi lumi run

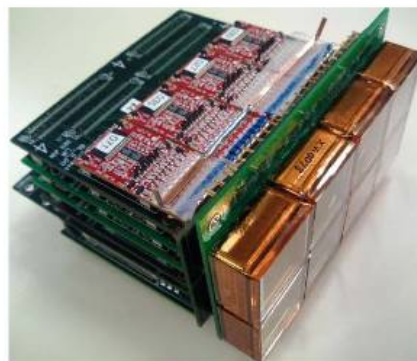
Produzione dei quarzi

1/4 del detector pre-finanziato dal DOE:

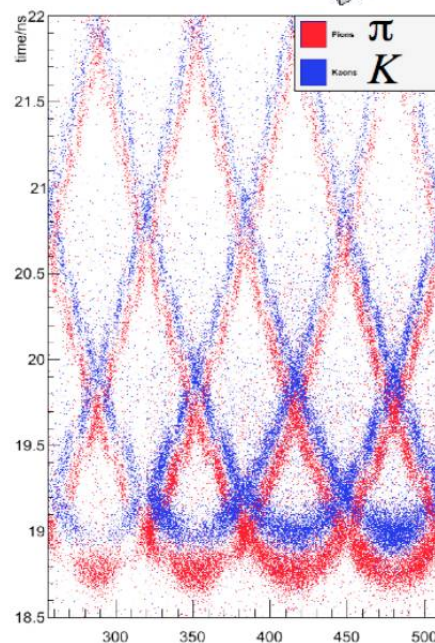
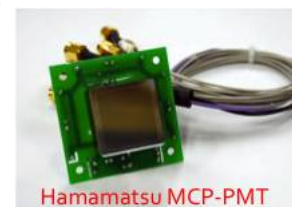
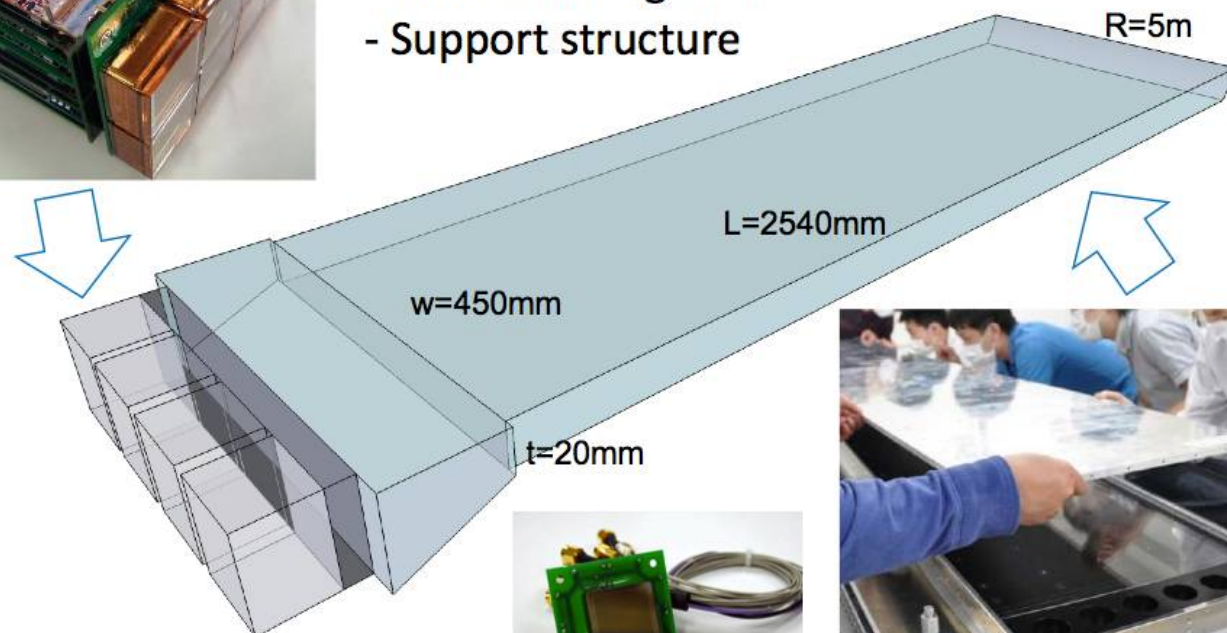
Barre: Zygo+Okamoto (1+1 arrivate, altre 4 in arrivo entro fine marzo)

Specchi: ITT Exelis (3/4 pronti)

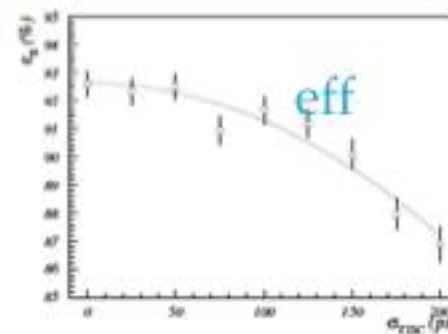
Expansion Boxes: Zygo (4 arrivati, OK)



- Quartz radiator, mirror and wedge
- MCP-PMT
- Waveform digitizer
- Support structure

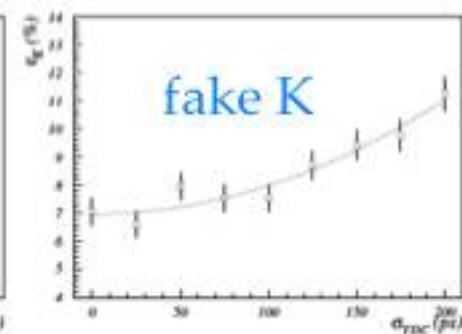


time resolution vs fisica



Belle-II
Belle-I

B→ππ eff.
90.4%
88.5%



B→κπ fake
7.1%
11.6%

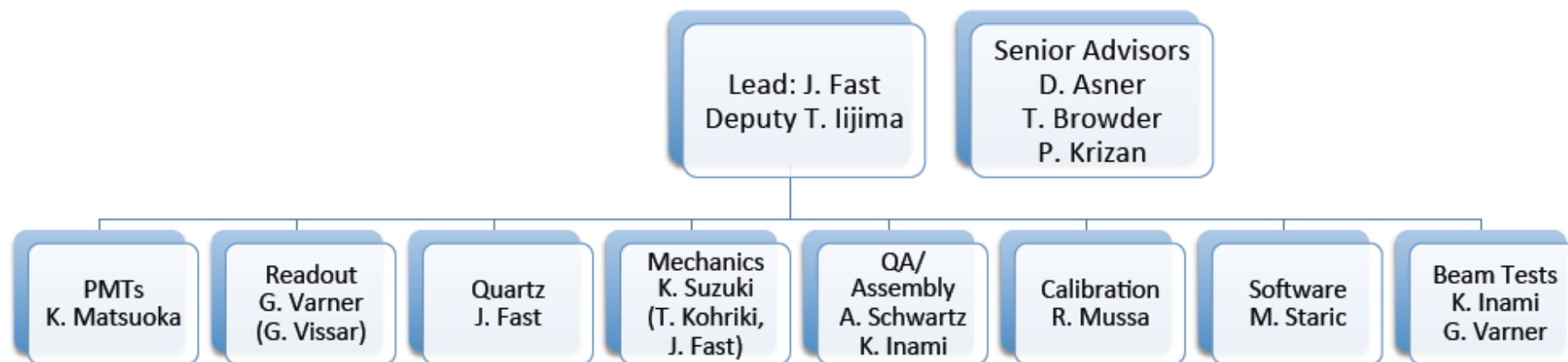
Contributi italiani al TOP counter

Torino:

- R.Mussa: responsabile del sistema di timing calibration
- U.Tamponi : partecipazione a CR tests, simulazioni MC, electronics tests

Padova:

- E.Torassa: contact person per la costruzione del sistema di timing calibration
- M.Benettoni: test di incollaggio delle QBB, progettazione sistema di time calibration *and beyond*
- R.Stroili: simulazioni MC, tests elettronica e apertura numerica
- P.Sartori: tests di radiation damage
- S.Lacaprra: tests apertura numerica
- M.Posocco: analisi dati dei tests



► New groups joined iTOP effort

- Padova and Torino – Calibration system, data quality management
- U. South Carolina – Nitrogen and dry air purge systems

+ KEK, Nagoya, UH Manoa, PNNL, Cincinnati, Lubiana

Update situazione TOP

23/4: Il CD/2-3 approval e' ufficiale
Fornitura PMT conclusa
ALD-MCPPMT : adesso abbiamo $\text{std} / \text{ALD} = 50 / 50$
Lifetime test su 44 ALD-PMT started
Ma ... ALD hanno $\frac{1}{2}$ gain a 1.5 T rispetto agli std
Update della background estimate per il TOP

Fornitura quarzi: 4+4 barre done, all mirrors done
Interferenza tra QBB flange e ECL flange scoperta
di recente → revisione del disegno della QBB →
bloccata la produzione dei prismi → ritardo di
2.5 mesi sulla costruzione della prima bar box

L'assemblaggio delle barre scivola **a luglio**
Il test a SLAC e' spostato **a ottobre**

Lavoro in Italia:
Progettazione: → talk Torassa
Tests a PD : → talk Torassa
Tests a TO : → talk Tamponi
Produzione bundle fibre: → talk Tamponi
LNL test → talk Torassa

15/5/2014, Belle2 refs meeting

R.Mussa, update on PID



Assegni di Ricerca in Italia:

Bandito 1 AdR a TO (16433/2014),
da Giu/Luglio

Richiesto 1 AdR(cofinanziato) a PD,
da fine anno

15/5/2014, Belle2 refs meeting

R.Mussa, update on PID

DOE: CD 2/3 del 21/3: raccomandazioni



2. Technical
B. Ratcliff*, SLAC - iTOP Optics

**OFFICE OF
SCIENCE**

iTOP Optics—Recommendations

- The production optical elements orders should proceed from all fully qualified vendors, with prudent attention given to meeting schedule while maintaining quality and minimizing costs.
- The full iTOP group should pursue additional beam and CRT tests of the full prototype with final optics and IRS() ASIC readout electronics to demonstrate that the complete system is capable of achieving the required physics performance.

DOE: CD 2/3 del 21/3: condizioni



U.S. DEPARTMENT OF
ENERGY

2. Technical

Sergio Zimmerman, LBNL –
Electronics iTOP & KLM

OFFICE OF

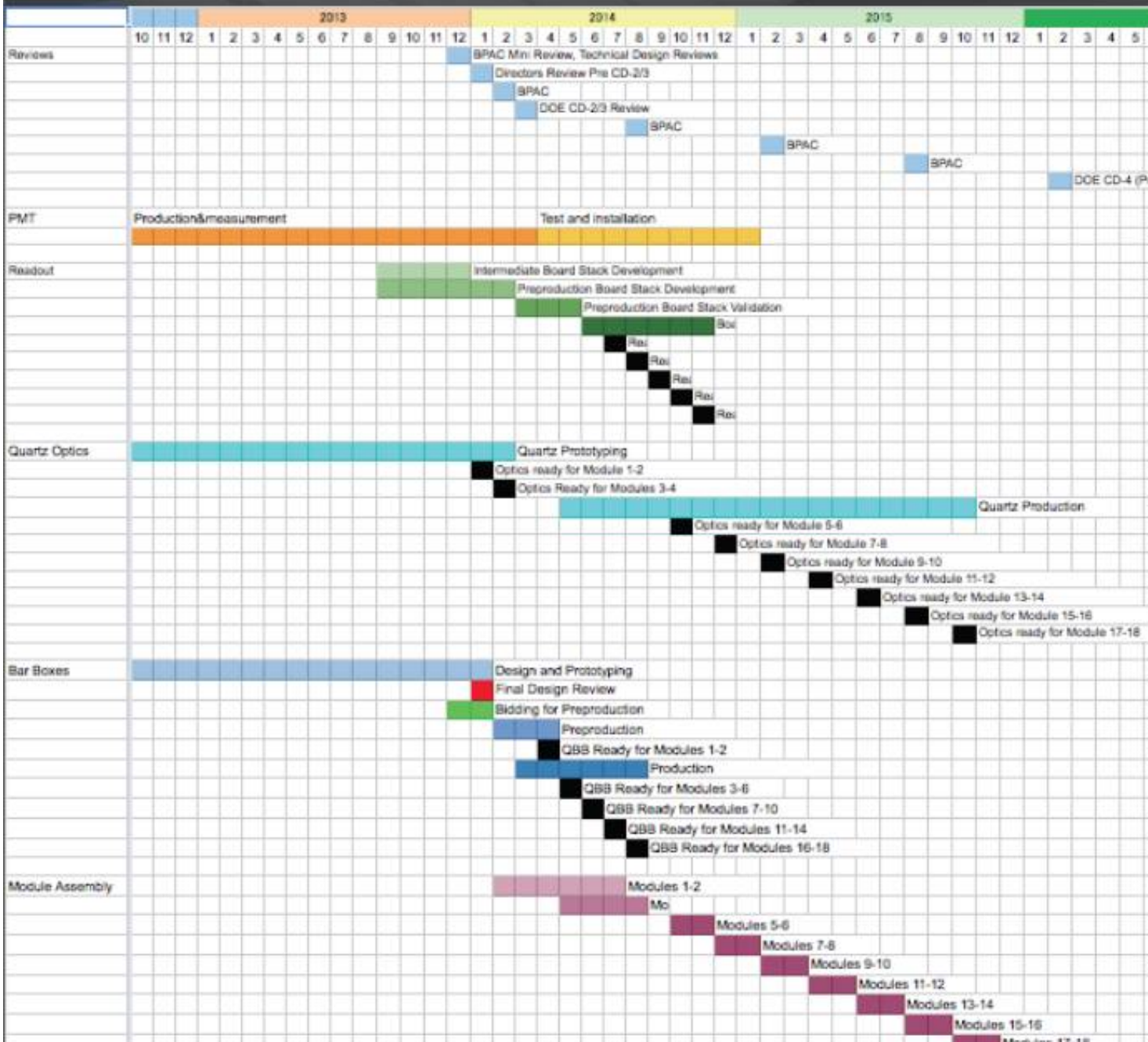
SCIENCE

1. Technical: Is the Belle II design scientifically and technically sound? **Yes**. Is it sufficiently mature to proceed to construction? **There are a few remaining risks**. Are there credible plans in place to resolve any remaining technical issues? **Yes, the Collaboration has plans to test and retire these risks**.
5. Other: Are there other issues of note relating to the U.S. Belle II Detector Upgrade project? **No**. In particular, has the project met all the CD-2/3 prerequisites in support of seeking CD-2/3 approval? **Yes, once these remaining risks are retired**.

DOE: CD 2/3 del 21/3: criticita' residue

- The schedule for delivery of the front-end electronics sets for iTOP is challenging. Very careful follow up of the production will be necessary to avoid delivery delays that could impact the production and testing of the bar-boxes.
- Risks on the performance of the electronics still remain. The POGO contacts were not fully tested in this application. Careful consideration of the thermal aspects of the iTOP front-end electronics is important and simulations were done that support the present cooling plan. But of course, testing of the proposal with a real system is very important to validate the strategy. The Collaboration should continue proceeding with the plans toward retiring or mitigating these risks.

iTOP Schedule in Belle II Google Schedule



Milestones tracked by Belle II Technical Coordinator are explicitly put as milestones in US schedule software so we can readily update the Belle II Technical Coordinator as the project progresses

Belle-II installation schedule (as of Feb.'14 B2GM)

	2013	Dec	SVD full readout chain works for the first time
		Dec	DEPFET EMCM study successfully complete
	2014	Jan	CDC wire stringing complete
		Jan	DESY beam test for PXD, SVD and DAQ
B2GM →		Jan	EKLM module assembly starts
BPAC →		end Mar.	Installation of forward endcap KLM complete
		Apr	ECL barrel readout electronics installation + test starts
		May	SVD ladder mass-production ready to start
		June	TOP 1st module with final electronics
B2GM →		June	ARICH readout electronics mass-production start
		end Sep	CDC readout board mass-production complete
		Sep	ARICH HAPD mass-production complete
BPAC →		Oct	Solenoid test activation for the first time after a few years
		Oct	Decide if we measure magnetic field in autumn 2015
B2GM →			
	2015	Jan	First beam, BEAST phase 1 starts
B2GM →		Feb	DEPFET Matrix production complete
BPAC →		Mar	ECL electronics installation complete
		Feb - Mar	TOP installation + test
		Apr - May	CDC installation + test
		May	ARICH ready as endcap
		Aug	PXD and SVD ready at KEK to start integration as VXD