TDR status report (FWD)

R. Faccini

3a requirements

Section name	Content	Who/status
3a.i energy and angular resolution	BaBar resolution → is there a description FWD only? BaBar-NIM has only a global plot, correct? Any superB specific studies?	RF/Collecting material
3a.ii radiation hardness	Plot with expected dose from Bruno and related comment	RF/Material available
3a.iii background rates	Plot with expected rates and comment about requirement on shaping time	RF/Material available
3a.iv solid angle, transition to barrel	Which is the coverage and need to avoid cracks. Mention that no room is left for F_PID	RF/ Understanding content

OK but need to move here the idea behing the hybrid and the proposal

3b LYSO Crystal

Section name	Content	Who/status
3b.i light output	Summary of known properties of LYSO on LO	RZ/ writing
3b.ii radiation hardness	Summary of known properties of LYSO on radhardness	RZ/ writing
3b.iii timing	Summary on known properties of LYSO in terms of raise and decay times	RZ/ writing
3b.iv uniformity	Summary on known properties of LYSO in terms of uniformity plus measurements on the existing crystals and tests with roughening	RZ/ writing
3b.v Manufacturing	Comparison between vendors, expected QA chain and test stands	RZ/ writing

OK

3c Test Beam results

Section name	Content	Who/status
3c.i the prototype	Characteristics of the prototype, including electronics	CC+VB/ can start from some material in note
3c.ii the test beams	Description of the two beam setups	CC/most material in note
3c.iii electronic noise	Measurements of noise during TBs	CC/material in note
3c.iv calibration/ temperature correction	Description of the definition of energy, calibration procedures and temperature corrections	CC/material available
3c.v data analysis and results	Procedure to measure resolutions and linerarity, results and comparison with MC	CC/ material not yet finalized (when should be set a stop?)

Missing conclusions, but confirmed

3d Mechanical Design

Section name	Content	Who/status
3d.i crystal wrapping	Procedures to wrap the crystals	RZ/writing
3d.ii APDs mounting	Description of the two beam setups	VB/material available
3d.iii mechanical support	Description of the primary and modular structure, of the alveolar prototype and the finite element analysis on it	Roma1/writing; ongoing analysis
3d.iv services	Description of where the cables/ calibration system (assuming same as BaBar) and cooling should be integrated in the design	Roma1/detailed plan related to integration → not possible in detail for TDR
3d.v installation	Expected installation procedures	Not detailed for TDR

Zullo, Pellegrino e Pettinacci ci stanno lavorando nella nuova ottica

3e/f readout and electronics

Section name	Content	Who/status
3e APD readout	Motivations for the choice of APDs as readout and temperature stability requirements	DH/material available
3f.i Block Diagram	Overall electronics setup	VB/presentation available
3f.ii Preamp	Design and performances of the preamp	VB/material available
3f.iii Shaper	Design and performances of the shaper	VB/material available
3f.iv Digitization	Design and performances of the digitization	VB/only ideas
3f.v Encumbrance and Cables	Expected encumbrance of the whole electronics and cablings that need to be passed	VB/from BaBar

Worked on, structure OK

3g calibration

Section name	Content	Who/status
3g.i preliminary calibration	Calibration procedures needed before data-taking	DH/material available
3g.ii source calibration system	Effects of LYSO natural radioactivity	DH/material available
3g.iii electronics calibration	Procedure to calibrate the electronics	VB/material available
3g.iv temperature monitoring and correction	Design of the temperature monitoring system and procedure to apply corrections (based on BaBar – need to change type of Xtal)	DH/material available (mostly)

No changes in plan

3h performances in simulation

Section name	Content	Who/status
3h.i resolution studies	Decription of expected energy and angular resolution	SG/available material
3h.ii background simulations	Impact of background on resolution (fastsim studies?) + benchmark modes	Elisa+Daniel/material available?

Shall we put here the optimization of the number of CsI layers? If not where?

3i Alternatives

Section name	Content	Who/status
3i.1 Pure LYSO	Including description of new mechanics	Roma1+existing material
3i.2 Pure CsI		PG/?
3i.3 BGO		Roma1/being written
3i.4 discussion of alternatives	Study from Stefano and document from David	RF/material available