

Task List for Inner Tracker Technical Design Report

Version 2, August 17, 2001

O. Steinkamp

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This document presents an update of the original task list dating from May 8. The status of the individual items was reviewed and deadlines have been assigned to all tasks. These deadlines were suggested and/or agreed upon by the respective responsables for each task.

1 Environment

Critical Parameters:

- particle flux, radiation damage
- dimensions sensitive area
- resolution, occupancy, multiple scattering
- mechanical constraints

Work to be done:

Task	Responsibility	deadline
layout tracking system (w/ Tracking Task Force)	O.Steinkamp	done
radiation levels with new layout	L.Shekhtman	Oct.01

2 Silicon sensors

Critical Parameters:

- geometry, strip pitch
- strip capacitance
- charge-collection efficiency
- depletion voltage, leakage currents, operating temperature after irradiation

Work to be done:

Task	Responsibility	deadline
measurements SPA-Detector sensors	O.Steinkamp	Mar.02
simulation alternative layouts (intermediate strips?)	F.Lehner	?
calculation NIEL, depl. voltage, leakage currents	F.Lehner	Oct.01

3 “On-Detector” Electronics (Front-End, Digitisation, Data Link)

Critical Parameters:

- noise performance
- signal shape
- digital resolution
- data link type
- location, radiation hardness components
- material budget
- cost

Work to be done:

Task	Responsibility	deadline
measure Beetle parameters	D.Baumeister	Oct.01
measure radiation hardness Beetle	S.Loechner	Oct.01
study link options study FADC options build data link test setup	A.Vollhardt	Dec.01
design front-end hybrid design pitch adaptor	C.Bauer and A.Vollhardt	Sep.01
ECS interface	T.Glebe	Sep.01

4 Ladders

Critical parameters:

- mechanical stability
- temperature profile (sensors and hybrid)
- sensor alignment
- material budget

Work to be done:

Task	Responsibility	deadline
build mechanical/thermal model of ladder	M.T.Tran	Oct.01
finite-element calculations?	F.Lehner	Dec.01
assembly and sensor alignment procedure, w/ timing estimate	M.T.Tran	Oct.01

5 Station Mechanics

Critical Parameters:

Box:

- thermal insulation
- electrical shielding
- material budget

Ladder support frames:

- mechanical stability
- ladder alignment
- cooling integration
- signal cables integration
- material budget

Patch panel:

- thermal insulation
- feedthroughs
- mechanical stability
- alignment support frames
- material budget

Support beams:

- fixation to Outer Tracker
- mechanical stability
- station alignment
- material budget

Work to be done:

Task	Responsibility	deadline
select box materials build thermal/mechanical box model	F.Lehner	Dec.01
optimize materials/geometry support frames build mechanical model support frames finite-element calculations?	F.Lehner	Feb.02
basic design patch panel, materials and geometry finite-element calculations?	F.Lehner	Jan.02
basic design support beams, materials and geometry	Zürich	Dec.01
basic idea alignment system	?	?

6 Infrastructure, Cooling, Power

Critical Parameters:

Cooling system:

- cooling power, cooling agent
- distribution
- safety, radiation damage?

Radiation monitoring:

- choice of monitors
- choice of locations
- integration

Low voltage / High voltage:

- distribution
- choice of cables
- monitoring
- stability
- location power supplies, radiation damage?
- grounding scheme

Work to be done:

Task	Responsibility	deadline
select cooling agent basic design cooling system	B.Adeva	Dec.01
basic design of HV/LV system grounding scheme	B.Adeva	Dec.01
basic layout rad.monitoring system	V.Pugatch	Oct.01

7 “Off-Detector” Electronics

Critical Parameters:

- location of components
- design (if different from VELO)

Work to be done:

Task	Responsibility	deadline
cost optimization	Y.Ermoline	Oct.01
redesign components, depending on choice of data link	Y.Ermoline	Dec.01
ECS interface	Y.Ermoline	Sep.01

8 System performance

Critical Parameters:

- resolutions, efficiencies
- tracking performance, physics performance
- robustness wrt deteriorated detector performance

Work to be done:

Task	Responsibility	deadline
simulation studies (w/ Tracking Task Force)	A.Polouektov	Oct.01
simulation with deteriorated detector performance?	A.Polouektov	Oct.01

9 Project Organization

Critical Parameters:

- production sites
- manpower requirements
- production schedules
- cost distribution

Work to be done:

Task	Responsibility	deadline
specification list production sites	O.Steinkamp	Aug.01
proposals production sites	Kiev Lausanne Santiago Zürich	Oct.01
estimate manpower requirements	J.A.Hernando	Sep.01
establish production schedule	J.A.Hernando	Sep.01
overall summary/distribution cost	U.Straumann	Jan.02