

Reviews of Particle Detector Technology

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Reviews of Particle Detector Technology

Encompasses two substantial reviews:

- 1) “Particle detectors at accelerators”
-> 17 authors, 80 pages
- 2) “Particle detectors for non-accelerator physics”
-> 8 authors, 39 pages

*One of the longer reviews in RPP,
and longest review in Booklet (19 pages).*

Intended purpose:

- introductions for graduate students
- quick reference to key formulae, etc. for experts

2014 PDG Survey, excerpts mentioning detectors:

“...particle detectors, radiation stuff, statistics... this is what I use most.”

“I only use the summary tables, detector articles, cosmic-ray fluxes, and shower physics”

“My most used sections of the booklet are the physical constants, the summary tables, and the interactions of particles with matter, and the detector physics.”

Status of subsections: “Particle detectors at accelerators”

		<u>Last Update:</u>
33.1: Introduction		
33.2: Photon detectors	<i>Recently Updated</i>	2011
33.3: Organic Scintillators		2011
33.4: Inorganic Scintillators	<i>Updated within past ~4 years</i>	2009
33.5: Cherenkov detectors	<i>Not recently updated</i>	2009
33.6: Gaseous detectors		
33.6.1: Energy loss and charge transport in gases		2010
33.6.2: Multi-wire Proportional and Drift Chambers		2010
33.6.3: High Rate Effects		2010
33.6.4: Micro-Pattern Gas Detectors		2010
33.6.5: Time-projection chambers		2011
33.6.6: Transition radiation detectors		2013
33.6.7: Resistive-plate chambers		2007
33.7: Semiconductor detectors		2013
33.8: Low-noise electronics		2013
33.9: Calorimeters		2012
33.9.1: Electromagnetic calorimeters		2009
33.9.2: Hadronic Calorimeters		2013
33.9.3: Free electron drift velocities in liquid ionization chambers		2009
33.10: Superconducting magnets for collider detectors		2011

Status of subsections:

“Particle detectors for non-accelerator physics”

Last Update:

34.1: Introduction	
34.2: High-energy cosmic-ray hadron and gamma-ray detectors	
34.2.1: Atmospheric fluorescence detectors	2013
34.2.2: Atmospheric Cherenkov telescopes	2013
34.3: Large neutrino detectors	
34.3.1: Deep liquid detectors	2013
34.3.2: Neutrino telescopes	2013
34.3.3: Coherent radio Cherenkov radiation detectors	2013
34.4: Large time-projection chambers for rare event detection	2009
34.5: Sub-Kelvin detectors	2009
34.6: Low-radioactivity background techniques	2013

For the next version of the Detector Reviews:

- 1) What topical or structural changes are needed?
 - Are any particular technologies no longer relevant?
 - Are the subsection lengths appropriate for each technology?
 - Are we missing coverage of any relevant technologies?
Ex. Highly-segmented neutrino detectors
- 2) Which sections require new authors?
- 3) Which sections require significant updates or formal reviews?
- 4) Are length and topical content in Booklet appropriate?

Nov. 2014: Focus on answering these questions.

Any suggestions are welcome.

Activities for 2014-2015:

For sections requiring significant updates and review:

- Nov. 2014: Confirm that authors will significantly update
- Dec. 2014: Identify reviewer(s)
- Feb. 2015: Request progress/draft of updated subsection
- 1 Apr. 2015: Subsection draft provided to reviewer(s)
- 1 Jun. 2015: Reviewer(s) response due to editor and authors
- 1 Aug. 2015: Reviewed subsection due to PDG editor

Activities for 2014-2015:

For sections requiring minor updates:

- Nov. 2014: Confirm that author intends to update
- Feb. 2015: Send requests for subsection updates
- Jun. 2015: Request progress/draft of updated subsection
- 1 Aug. 2015: Updated subsection due to PDG editor

Activities for 2014-2015:

For sections requiring new authors:

- Nov. 2014: Confirm that authors are required
- Dec. 2014: Identify new authors
- Feb. 2015: Request progress/draft of new subsection
- 1 Apr. 2015: Subsection draft provided to PDG editor
- 1 Jun. 2015: PDG editor's response sent to authors
- 1 Aug. 2015: New subsection due to PDG editor

Reviews of Particle Detector Technology

Two substantial reviews encompass accelerator and non-accelerator technologies.

A relevant reference for both students and those with more experience.

Most recent subsection updates vary from 2007 to 2013.

Schedule for 2014-2015 activities in planning.