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# Detector subgroup

There are eight members of this subgroup who will investigate the detectors used in particle collision. The subgroup leader is Adrian Cross. The other members of this group are Dwayne Spiteri, John Cotterill, Ryan Jones, Russell Turner, Dan Hatton, Antony Judd and Andrew Clarke.

For the preliminary research the group was split up into pairs and set a detector type to investigate.

| **Members of pair** | **Detector type** |
|---|---|
| John Cotterill and Andrew Clarke | EM Calorimeters |
| Dwayne Spiteri and Adrian Cross | Luminosity Calorimeters |
| Russel Turner and Anthony Judd | Muon detectors and trackers |
| Dan Hatton and Ryan Jones | Hadronic Calorimeters |

# Objectives

The first objective of this group is to investigate the particle detector types which can be used in particle colliders. The type of things which need to be researched are the efficiency of the detectors (which is dependent on the incoming particle energy), component lifetime and detector shapes.

This objective relies on input from the collider group as properties such as the energy of the particles being detected and the logistics of where detectors can be placed, which will depend on the collider type, which can be linear, synchrotron or fixed target. It also relies on input from the exotic particle subgroups as the physics being investigated by this collider, and subsequently the detector types which need to be investigated, is being determined by this group. The preliminary exotic subgroup research will be completed on the 27th January at which point these specific detectors can be investigated.

The second objective is to model these particle detections. This will be done using a coding language such as (insert coding languages.) These detections will be modelled in a statistical manner such that they will model a large number of particle collision detections so that a statistically significant result can be obtained.

# Dates

| **Date** | **Objective name** | **Brief description** |
|---|---|---|
| 29/01/2015 | Preliminary research on general detector | Preliminary research, in pairs, on general detectors currently used in particle colliders. |
| 05/02/2015 | Research on exotic particle detectors | Research on detectors needed for exotic particle research. |