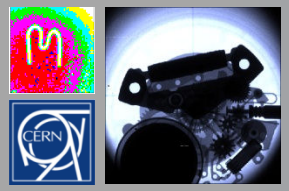
CERN@School

Medipix/Timepix as a Teaching aid

Richard Plackett
CERN, RD51 meeting, 22nd Feb 2010



Introduction

Working with the Simon Langton School in Canterbury, UK
Using Timepix in projects to inspire students to study physics
So far exceptional rate going on to university courses

LUCID

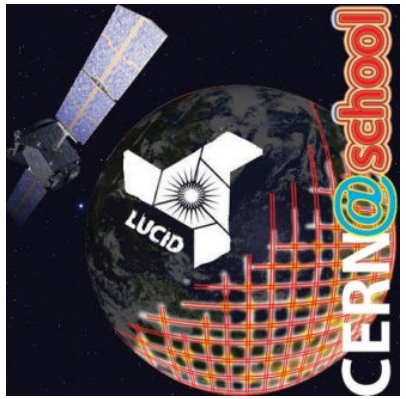
- Space based cosmic ray flux experiment
- Launches 2011 on SSTL satellite
- Gives students experience of *real* science

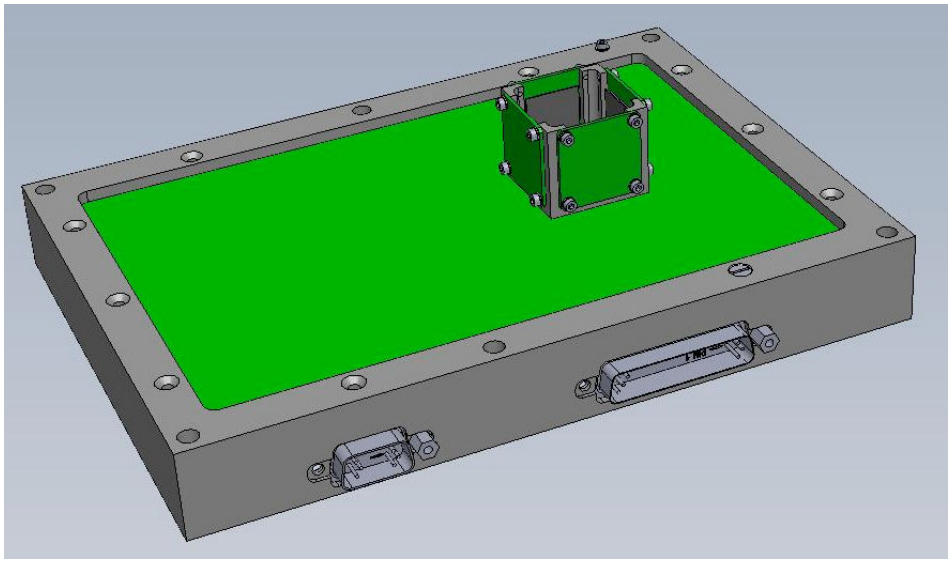
CERN@School

- Timepix USB systems as cosmic ray detectors
- Also excellent classroom teaching aids for radiation
- Preparing to distribute systems to other local schools

LUCID

- SSTL are finalising the design and beginning qualification for space-worthiness
- Array of silicon detectors to count the incidence of different particles
- Use particle interaction pattern to separate heavily charged slow ions from gammas etc





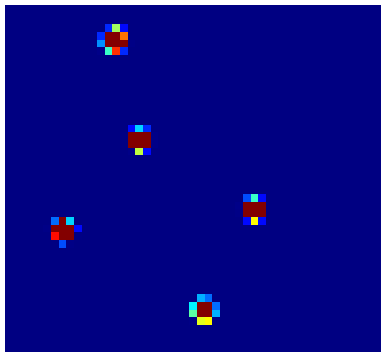
CERN@School

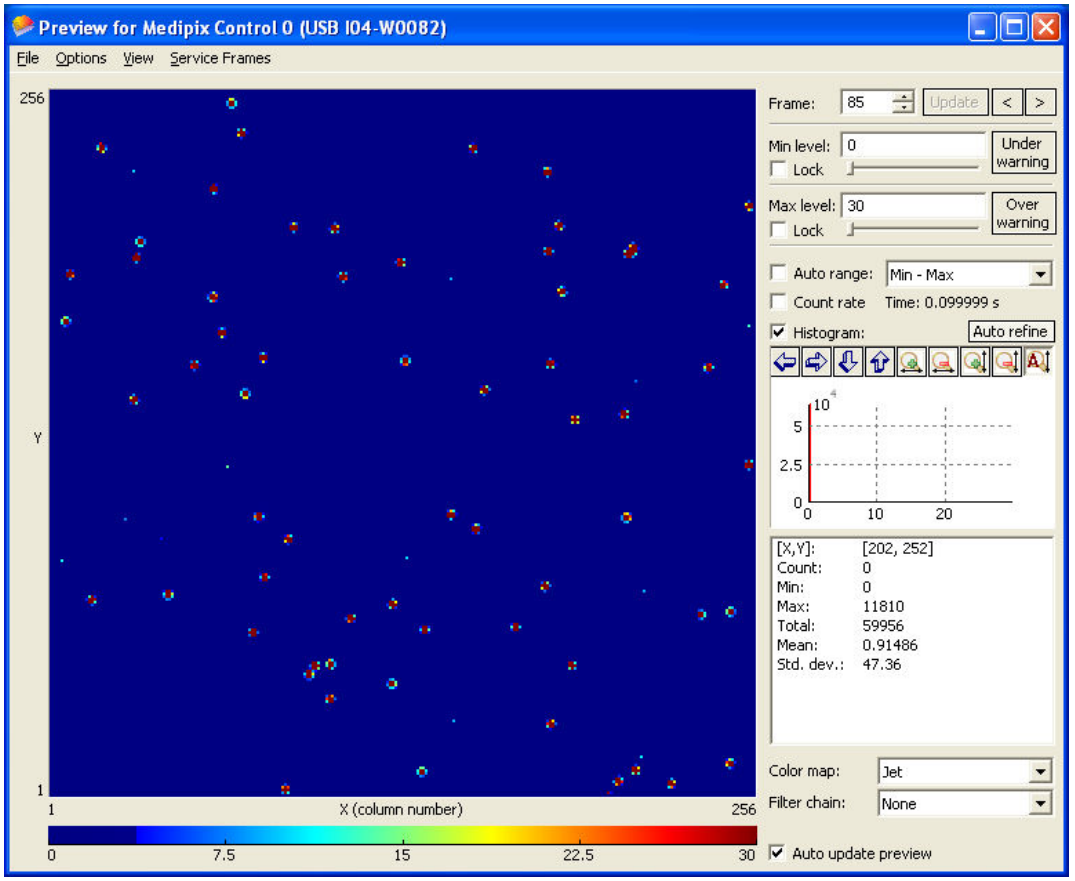
- Currently uses standard Timepix USB system
- First stage is to have 10 systems on loan in local area
- Support materials and training are already prepared

- Additional support from regional funding agency, Cambridge University, DELL etc
- Will attempt to link to other cosmic ray experiments.
- Most beneficial as a way of getting these systems into classrooms
- CERN and Medipix group would like to make this a more general project

A Quick Demonstration

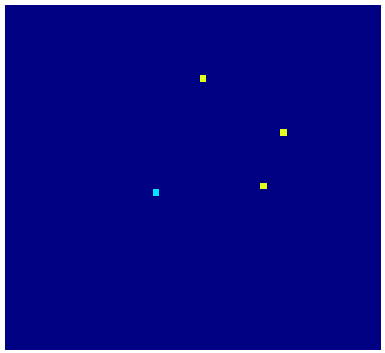
A demonstration of the Timepix USB system with an Am source

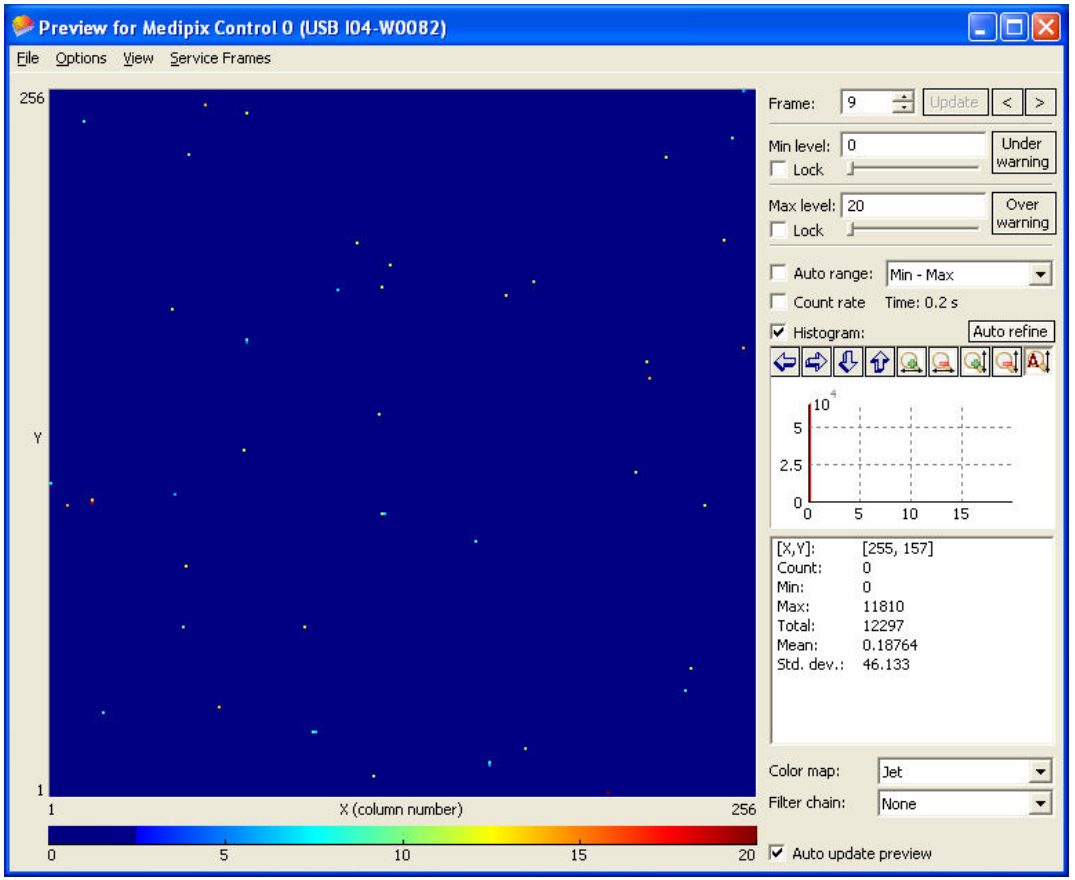




Demonstration - Gammas

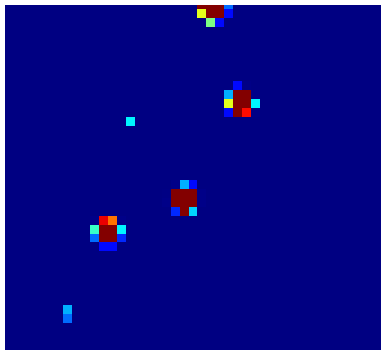
A simple kapton filter removed the alphas

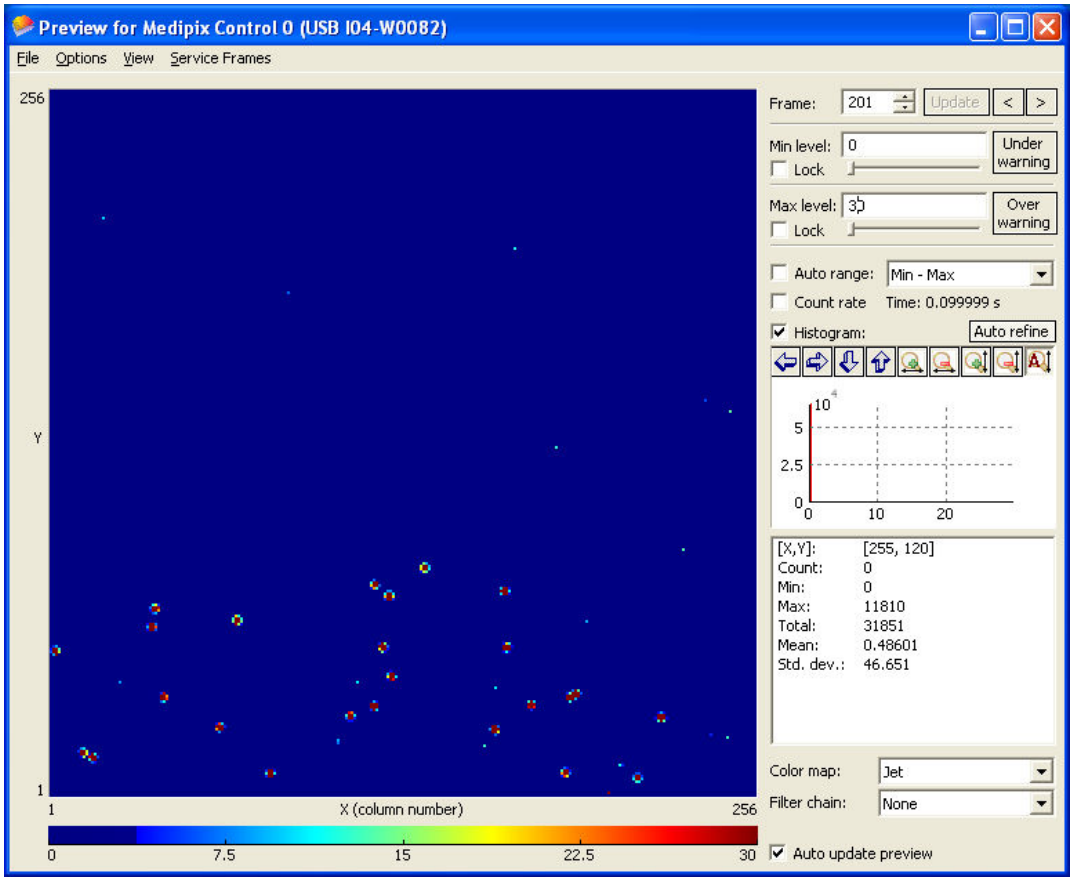


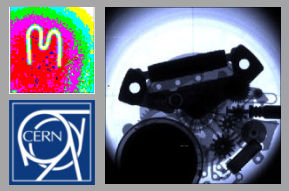


Demonstration – half and half

A filter covering half the detector demonstrates the absorbtion







Conclusions

- LUCID and CERN@School are already having an impact on numbers of students studying physics at university
- Whilst not every school can have a satellite, most could have access to pixel detector
- The real time image and ability to ‘see’ different particles interacting makes it an excellent teaching aid
- This power would only be increased by converting it to a miniature gas detector capable of reconstructing 3D tracks