

Introduction to new CCD technology and applications

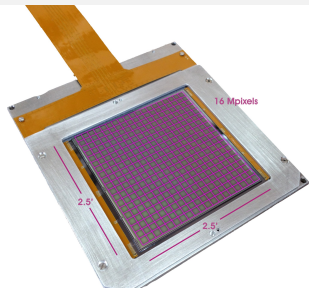
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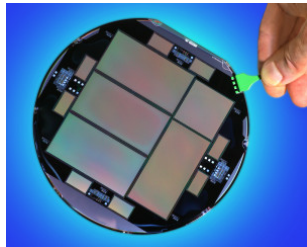
Institutions:

- Instituto de Investigaciones en Ingeniería Eléctrica
CONICET-Universidad Nacional del Sur.
- Laboratorio de detección de partículas y radiación
Centro Atómico Bariloche.
- Fermi National Accelerator Laboratorys.

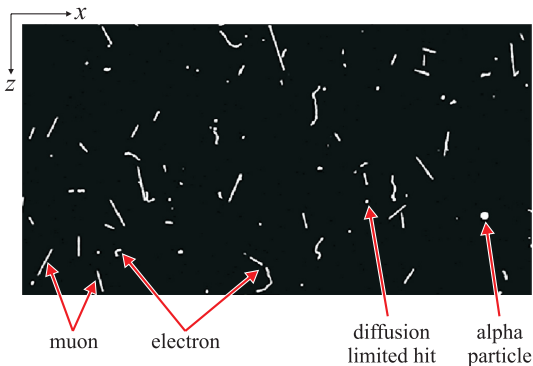
Silicon Charge Coupled Device (CCD)



● 650 μm -thick CCD

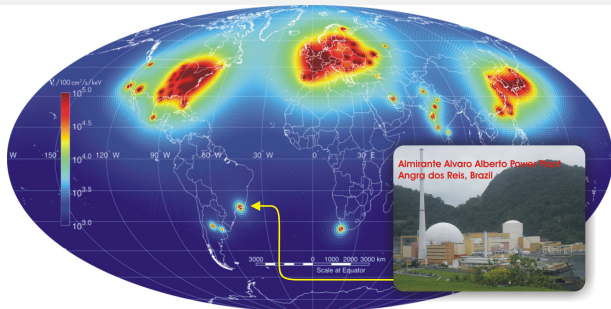
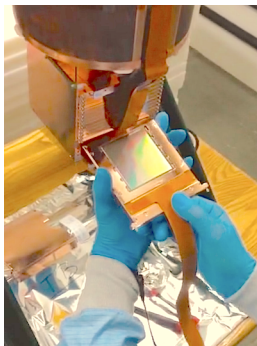


● CCD fabrication



● CCD output data (2D image)

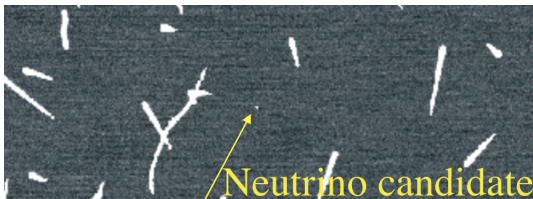
Direct observation of nuclear-reactor neutrinos



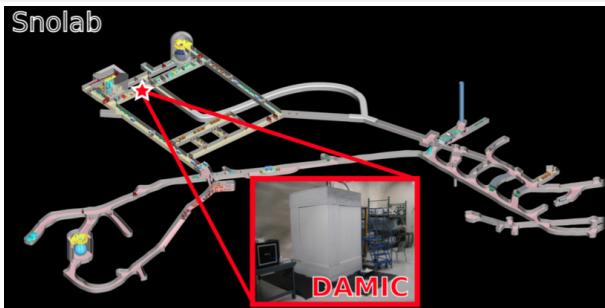
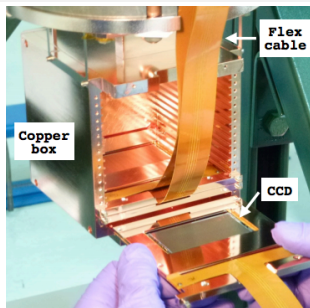
- 14 CCDs running in parallel @ A. A. Alberto Power Plant in Brazil



**Coherent
Neutrino-
Nucleus
Interaction
Experiment**



Direct Dark Matter Detection

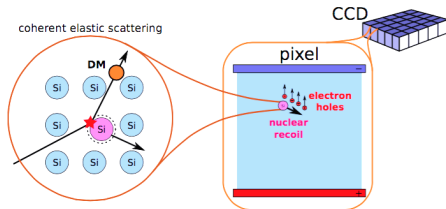


- CCDs running in parallel 2 km underground @ Snolab in Canada.



DAMIC

**Dark
Matter
in
CCDs**



Proposed Activities @ INFIERI 2016

- Discover CCD main features:
 - Why CCDs are a promising technology for particle detection?
 - How do they get their very low energy threshold (7 eV)?
 - Microscopy structure of CCDs
- Explore Particle interaction in Silicon.
 - Identify particles tracks in the CCD.
 - Explore event selection techniques.
 - Identify atmospheric muons.
 - Explore CCD capability measuring muon interaction.

