

## DETECTORS FOR NON-ACCELERATOR PHYSICS

Don Groom

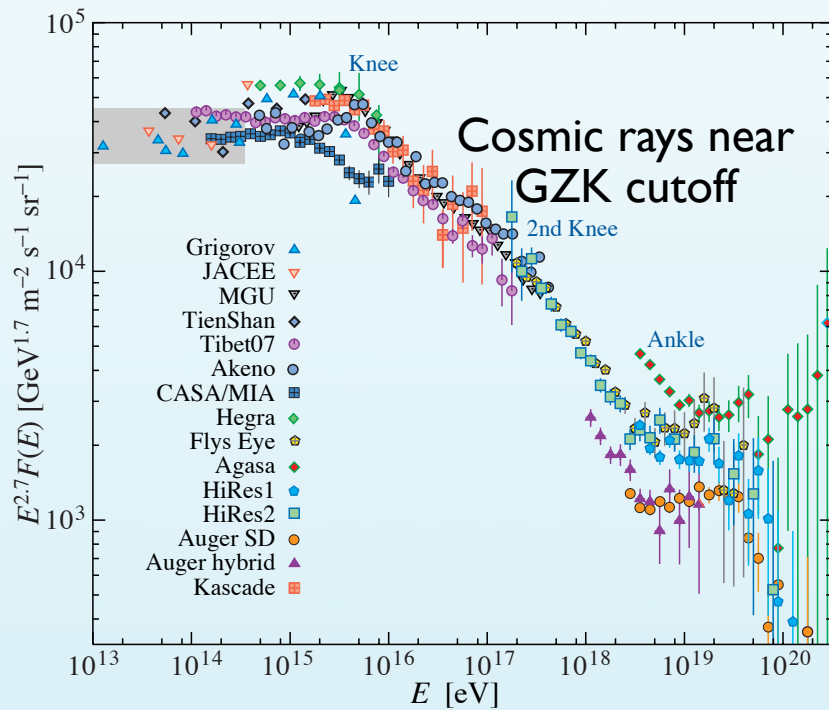
Particle Data Group

Lawrence Berkeley National Laboratory



**Non-accelerator** experiments have become more and more important in our trade

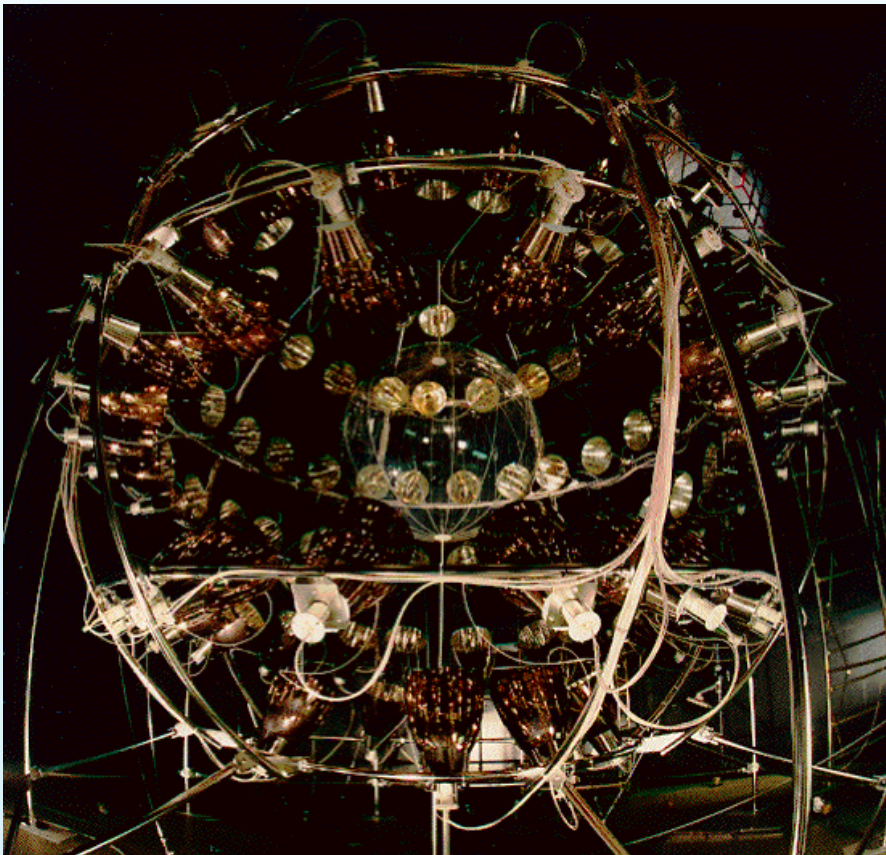
— and yet, our **“Particle Detectors”** section has barely mentioned their unique and imaginative instrumentation



PDG has responded with the introduction of an entirely new section in RPP10, **“Detectors for non-accelerator Physics”**

following the old section, now reborn as **“Detectors at accelerators”**

“*Detectors for non-accelerator Physics*” covers only ground-based instrumentation *not* found in accelerator experiments (at least not in recognizable form)



At the same time, many sections of “*Detectors at accelerators*” have been carefully massaged to eliminate overlap and to expand on subjects common to both

(“Silicon detectors” →  
“Semiconductor detectors,” etc.)



Experts in the different fields were asked to recommend authors; after vetting they were invited to write the sections. The results were then refereed and modified

A quick run-through:

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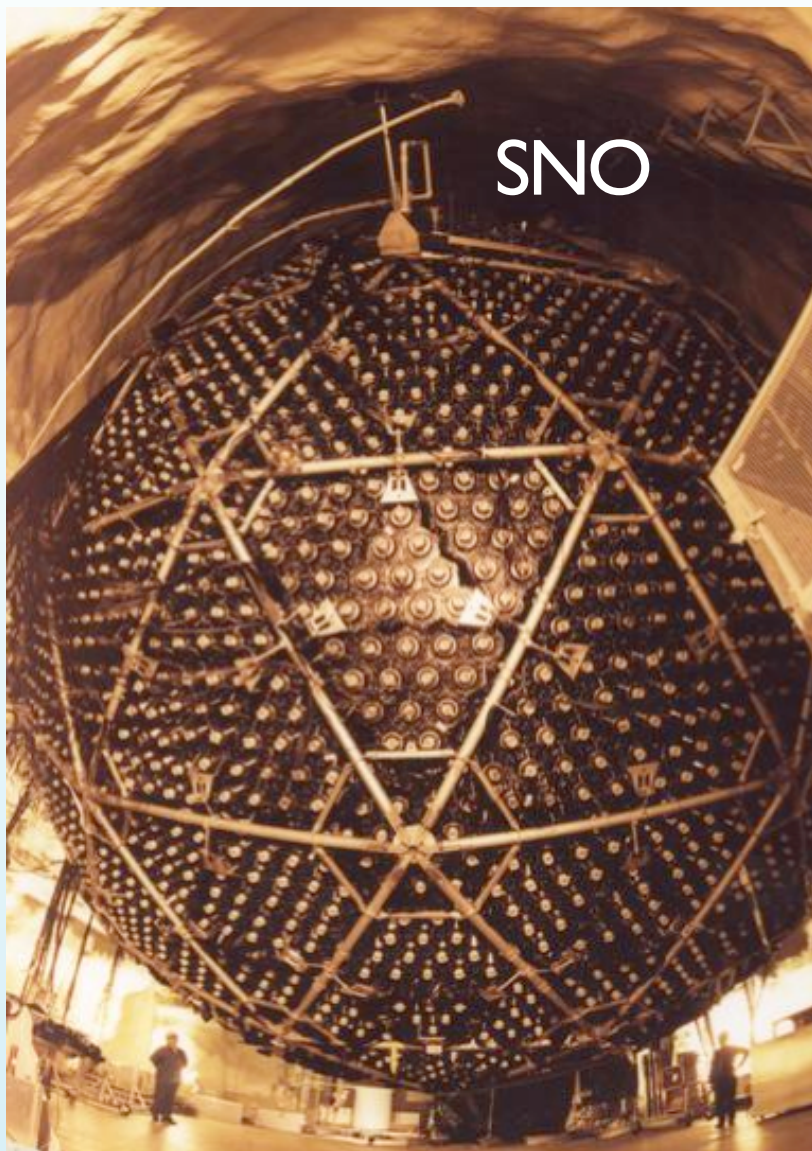


- Atmospheric fluorescence detectors: \*  
Lawrence Wiencke  
(Colorado School of Mines)

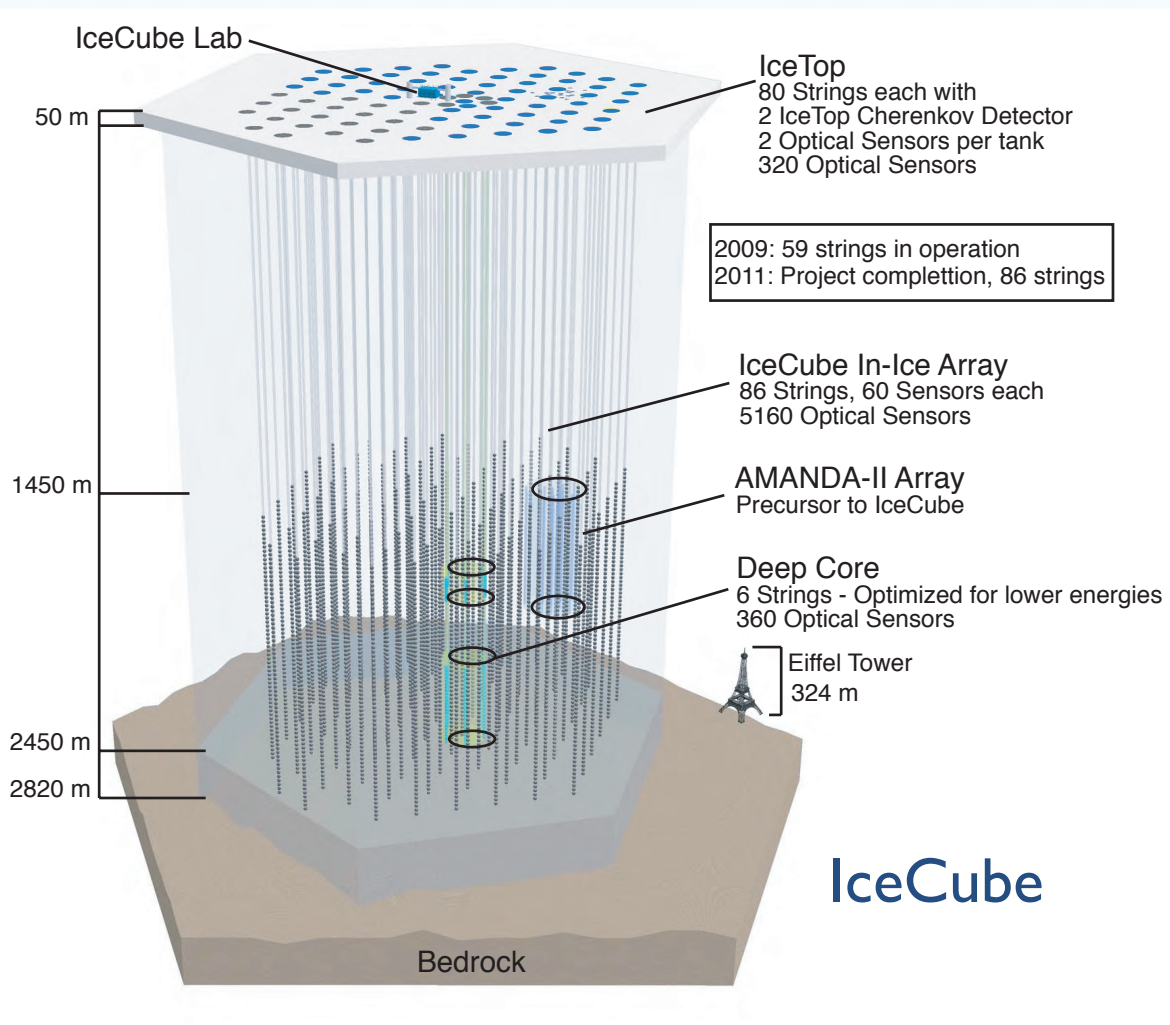
\* Think Fly's Eye



- Atmospheric Cherenkov detectors for high-energy gamma ray astronomy:  
Jamie Holder (Bartol Institute)

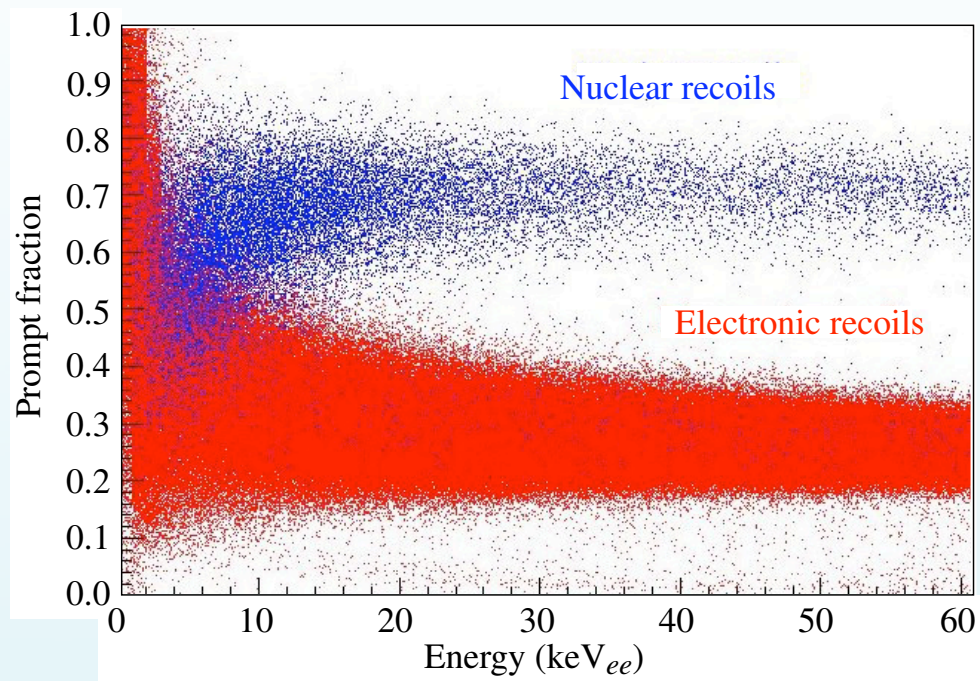
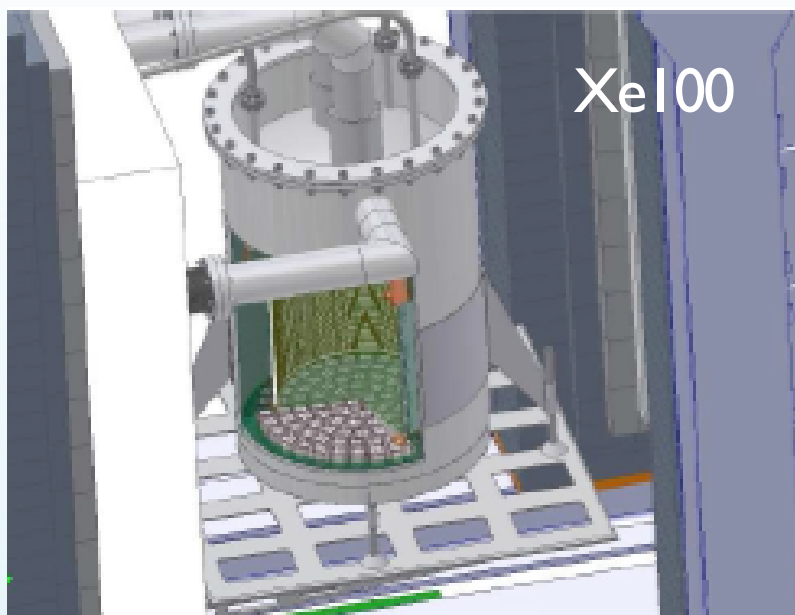


- Deep liquid detectors for rare processes:  
Kate Scholberg & Chris Walter  
(Duke University)



- Neutrino telescopes:  
Albrecht Karle  
(University of Wisconsin)

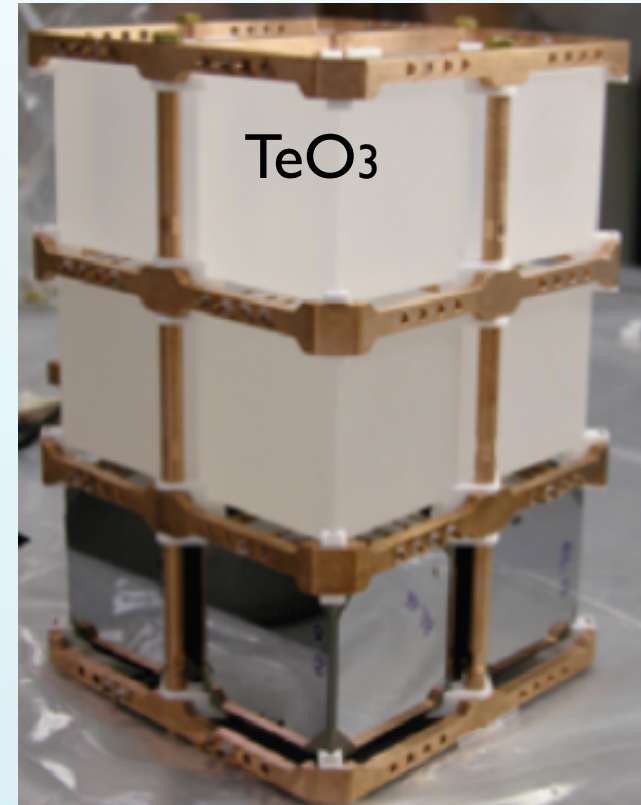
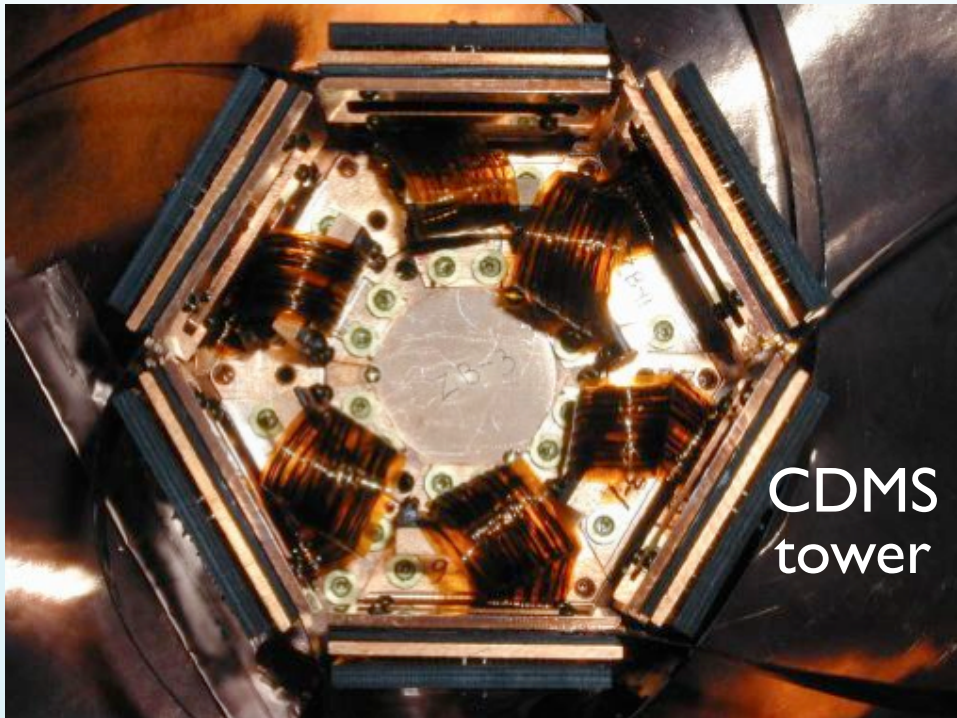




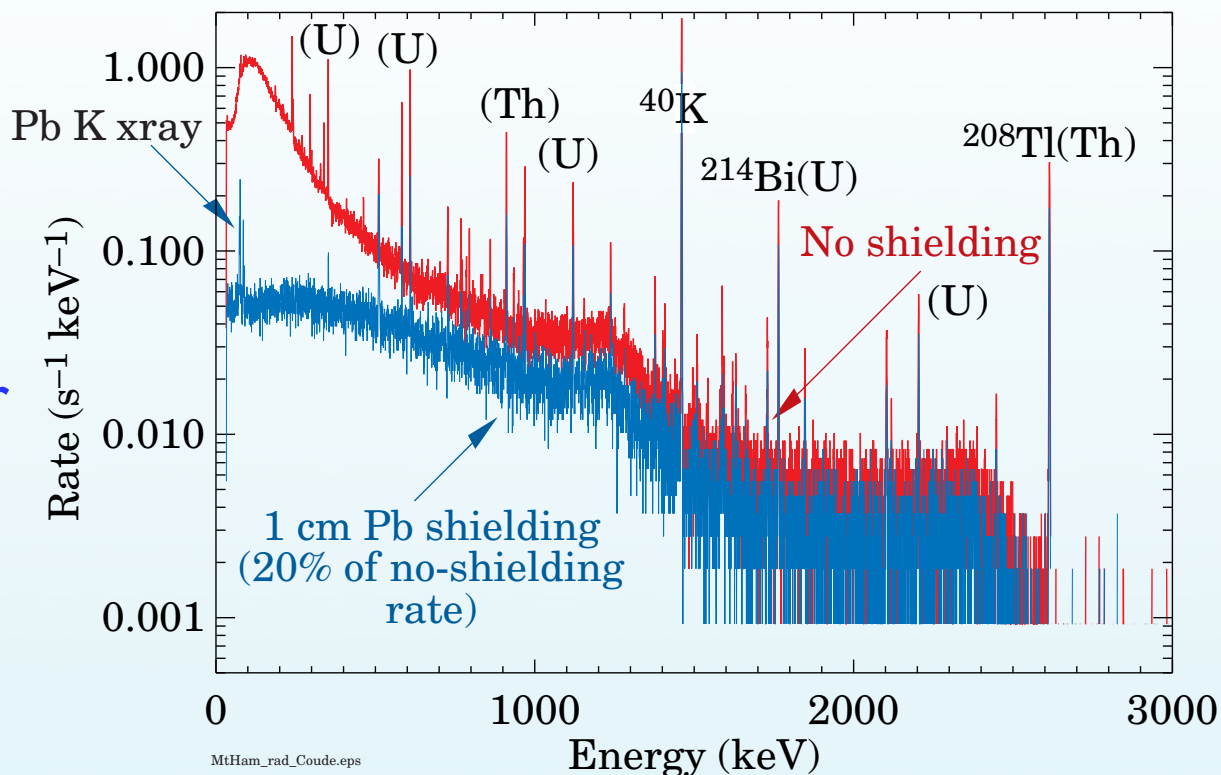
- Large TPC's for rare event detection:  
Mike Heffner (LLNL)



- Sub-Kelvin detectors (for DM, 0- $\nu$ -double beta decay searches)  
Sunil Golwala (Caltech)



Except for a few surface detectors like Fly's-Eye, AUGER, and VERITAS, **ALL** (I think) non-accelerator physics experiments are limited by radioactivity and cosmic ray flux.



So it is reasonable to conclude the non-accelerator detector discussion with ———

- Low-radioactivity background techniques:  
Andreas Piepke (University of Alabama)



I'm very happy - and impressed - with the new authors we have signed aboard and new section they have produced. To them, thanks not only for the writing but for the suggestions out which this Review evolved

Is the new review complete and optimal?  
Of course not, and physicists have not been shy with their criticisms

Pleased though I am, perfection will have to wait until RPP2012