# HK calibration WG overview and plan

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January 28th, 2014

### HK calib WG

- HK calibration WG has worked on designing the detector calibration method and technique
  - Ideas has been compiled in a document (internal document)
  - See also presentations in previous HK meetings
- Next step is to test ideas and establish "real" design of HK calibration
- Several R&D and prototype projects
  - Source deployment system
  - New calibration sources

## R&D projects

- Presentations at Calibration WG session:
  - Calib source deployment system [Atsumu S.]
  - LED light source R&D [Niel M.]
  - Neutron generator [Roger W.]
- Other on-going R&D projects
  - PMT Test Facility at TRIUMF [Hiro T.]
    - Optical property of PMT glass
    - Angular / position dependence of PMT response
  - Fission-triggered "Nickel source" [Koshio-san]
    - Potential energy calibration source
- Designing the HK source deployment system
  - Sophisticated source insertion system (3D)
    - UBC engineering students

## Source deployment system

Atsumu. S.

- Source deployment system in SK SK source deployment system is operated
  - One of the source depl remote con
    - HK I0 com



- R&D / prototype of a source deployment system
- Plan to use/test in SK and HK prototype detector







- Light calibration sources are important for HK photosensors
  - Gain, timing calibration & detector stability monitoring
- SK employs laser (N<sub>2</sub>, LD), Xe lamp
- LED is a candidate for HK light calib source
  - Compact, cheap, and stable
  - Used in many experiments; established technology
- Plan to develop a prototype
  - LED and driver



#### Hiro T.

### PMT test facility (PTF)



- Study response of large area photosensors to light (in water) across:
  - wavelengths (330-550 nm)
  - incident angles to surface
  - locations on the PMT
  - polarization
- Light reflected from the PMT affects response of other PMTs (in water)
- Study reflectivity of photosensor across same parameter space,

Goal: provide parameterized model of PMT response and reflection that can be "fit" with *in situ* data (somewhere in between calibration/photosensor development)

#### Hiro T.



Thursday, June 20, 13 Tuesday, January 28, 14

## Enjoy HK calibration session!