

# Gas Detectors

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## Participants

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-- and many others

# Conclusions

- General
  - Detector development should be carried out in close collaboration with instrument scientist to ensure that requirements are understood
    - Dead time
    - Detector Distance Uncertainty
    - Count Rate
    - Geometry
  - Detectors fall naturally into two categories
    - Large Area-Large Pixel
      - Pixel sizes greater than 5mm
      - Areas of 10m<sup>2</sup> or more
    - Small Pixel
      - Pixel sizes of 5 mm or less
      - Areas on the order of m<sup>2</sup>

# Large Area Detectors

- Cost is major challenge
  - Current technologies are ~ \$100K/m<sup>2</sup>
    - Would like a fraction of this
      - New construction techniques
      - GEM's
- Higher efficiency – (50% at 0.5 Å)
  - Pressures remain a challenge
    - Neutron converters?
- Designer Geometries
  - Each Detector bank has unique features.
    - Adaptable technologies
- Higher Count Rates
  - Individual pixels
  - Ionization mode

# Small Pixel Detectors

- Small Pixels
  - Micropattern Detection
    - Proton range
    - Pressure Vessels
  - Alternate Solutions
    - ORDELA (2mm) subject of SBIR
- Pixel Interpolation
- Parallax Problems

# General Issues

- Readout Technologies
  - Individual Pixel Detectors Challenging
    - ASIC's, ?
- Detector Quench Gas
  - Stability
  - Stopping Power
  - Lifetime
- Monitors
  - Pixilated
    - Pixel size?