

# Cosmic Frontier - Instrumentation Frontier

## CF-IF liaising

### Cosmic Frontier Conveners

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### **Hugh Lippincott** - liaison from CF

- Background in dark matter direct detection (mainly liquid nobles, bubble chambers)

### **Kent Irwin** - liaison from IF

- Background in QS, WIMPs/axions, mm-wave and CMB, x-ray

# Cosmic Frontier

- CF1. Dark Matter: Particle-like
- CF2. Dark Matter: Wave-like
- CF3. Dark Matter: Cosmic Probes
- CF4. Dark Energy and Cosmic Acceleration: The Modern Universe
- CF5. Dark Energy and Cosmic Acceleration: Cosmic Dawn and Before
- CF6. Dark Energy and Cosmic Acceleration: Complementarity of Probes and New Facilities
- CF7. Cosmic Probes of Fundamental Physics

- CF science has strong connections to IF, and tracking these connections is important to make sure that important investments are identified
- We plan to start by developing a table of connections, so nothing is missed.

Your input is necessary! Here are a few to get us started:

- IF1: Quantum sensors: needed for CF1. DM Particle like, CF2. DM Wave like, ....
  - IF2: Photon detectors: needed for all CF topical groups
  - IF4: Trigger and DAQ: needed for all CF topical groups
  - IF7: Electronics / ASICs: needed for all of the CF topical groups
  - IF8: Noble Elements: needed for CF1. DM Particle like, ...
  - And many more.
- We will need help from each topical group in IF to fill out a full table and to identify particular technologies that are relevant so that connections to CF are made.

# Questions

What we need from you:

- Help in filling out the interconnection table & identifying key technologies to connect to CF topical groups.
- Help in identifying CF topical group science goals that need to flow down to technical specifications in IF topical groups.
- We will reach out to all of the IF topical group subconvenors.

Other questions:

- What do IF groups need to help close the loop with CF?
  - E.g. do you need science plots to appear in IF topics - “this development will get us this science”
- Should we encourage multiple LOIs on topics that address IF + CF, or single LOIs that are cross-listed?