

**ECFA Detector R&D Roadmap  
Symposium of Task Force 5  
Quantum and Emerging  
Technologies**

**Report of Contributions**

Contribution ID: 1

Type: **not specified**

## Introduction

*Monday 12 April 2021 09:00 (15 minutes)*

**Presenters:** MARCEL, Demarteau (ORNL); DOSER, Michael (CERN); ALLPORT, Philip Patrick (University of Birmingham (UK))

Contribution ID: 2

Type: **not specified**

## **EDM searches & tests of fundamental symmetries**

*Monday 12 April 2021 09:15 (30 minutes)*

**Presenter:** FIERLINGER, Peter (TUM)

**Session Classification:** Science targets - Overview and Landscape

Contribution ID: 3

Type: **not specified**

## **Tests of QM [wavefunction collapse, size effects, temporal separation, decoherence]**

*Monday 12 April 2021 09:45 (30 minutes)*

**Presenter:** BASSI, Angelo (Department of Physics - University of Trieste)

**Session Classification:** Science targets - Overview and Landscape

Contribution ID: 4

Type: **not specified**

## **Multisensor and networked detection**

*Monday 12 April 2021 10:15 (30 minutes)*

**Presenter:** BARONTINI, Giovanni (Birmingham)

**Session Classification:** Science targets - Overview and Landscape

Contribution ID: 5

Type: **not specified**

## **Axion and other DM, non-DM Ultra-light particle searches**

*Monday 12 April 2021 10:45 (30 minutes)*

**Presenter:** ARVANITAKI, Mina (Perimeter Institute)

**Session Classification:** Science targets - Overview and Landscape

Contribution ID: 6

Type: **not specified**

# Quantum-limited Metrology with Optical Clocks

*Monday 12 April 2021 12:30 (30 minutes)*

**Presenter:** HUME, David (NIST)

**Session Classification:** Experimental methods and techniques - Overview and Landscape

Contribution ID: 7

Type: **not specified**

## **Novel ionic, atomic and molecular systems [RaF, tests in multiatomic molecules, exotic atoms]**

*Monday 12 April 2021 12:00 (30 minutes)*

**Presenter:** SAFRONOVA, Marianna (Univ. Delaware)

**Session Classification:** Experimental methods and techniques - Overview and Landscape



Contribution ID: 8

Type: **not specified**

## **Superconducting platforms for sensing and computing**

*Monday 12 April 2021 14:30 (30 minutes)*

**Presenter:** ROMANENKO, Alexander (FNAL)

**Session Classification:** Experimental methods and techniques - New Developments

Contribution ID: 9

Type: **not specified**

## **High sensitivity superconducting cryogenic electronics, low noise amplifiers, TES**

*Monday 12 April 2021 14:00 (30 minutes)*

**Presenter:** WITHINGTON, Stafford (Cambridge)

**Session Classification:** Experimental methods and techniques - New Developments

Contribution ID: **10**

Type: **not specified**

## **Quantum Acceleration of Axion Detection**

*Monday 12 April 2021 15:00 (30 minutes)*

**Presenter:** IRWIN, Kent (Stanford)

**Session Classification:** Experimental methods and techniques - New Developments

Contribution ID: 11

Type: **not specified**

## **Mechanical / optomechanical detectors**

*Monday 12 April 2021 15:30 (30 minutes)*

**Presenter:** GERACI, Andrew (Northwestern)

**Session Classification:** Experimental methods and techniques - New Developments

Contribution ID: 12

Type: **not specified**

## **Spin-based techniques, NV-diamonds, Magnetometry**

*Monday 12 April 2021 11:30 (30 minutes)*

**Presenter:** BUDKER, Dima (Mainz)

**Session Classification:** Experimental methods and techniques - Overview and Landscape

Contribution ID: 13

Type: **not specified**

## **Low energy techniques for neutrinos and axions**

*Monday 12 April 2021 16:15 (30 minutes)*

**Presenter:** GASTALDO, Loredana (KIP)

**Session Classification:** Experimental and technological challenges

Contribution ID: 14

Type: **not specified**

## **Atom interferometry at large scales (ground based, space based)**

*Monday 12 April 2021 17:15 (30 minutes)*

**Presenter:** HOGAN, Jason (Stanford)

**Session Classification:** Experimental and technological challenges

Contribution ID: 15

Type: **not specified**

## Discussion session

*Monday 12 April 2021 17:45 (45 minutes)*

- Technical challenges and barriers
- Scaling up from table-top systems
- Applying quantum technologies to high energy detectors

**Session Classification:** Experimental and technological challenges



Contribution ID: 16

Type: **not specified**

## Quantum scintillation materials

*Monday 12 April 2021 16:45 (30 minutes)*

**Presenter:** AUFRAY HILLEMANS, Etienne (CERN)

**Session Classification:** Experimental and technological challenges