

# Fundamental Physics Decadal Kick-off Townhall

## Introduction of Splinter Sessions

Ulf Israelsson  
Fundamental Physics Portfolio Manager,  
Jet Propulsion Laboratory, California Institute of Technology  
Dec 3, 2020

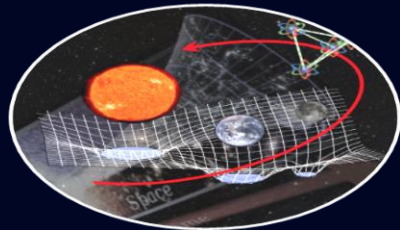
Work performed by the Jet Propulsion Laboratory, California Institute of Technology  
under a contract with NASA

# Splinter Sessions

*Physics with  
Optical Clocks*

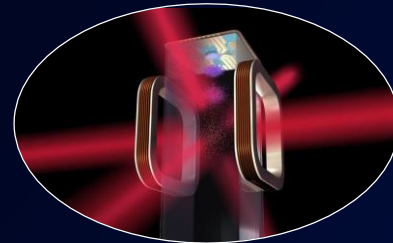


*Quantum Test of  
Equivalence*

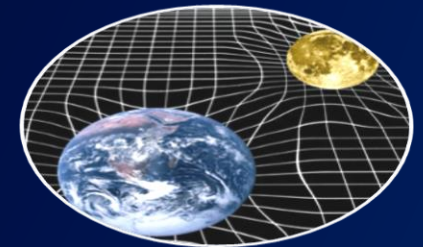


*Direct Detection  
of Dark Energy*

*Cold Atom Physics*



*Quantum  
Entanglement*



*Dusty Plasma  
Physics on the Moon*



*Complex/Dusty  
Plasma on the ISS*



## Cold Atom Physics

- **Prof. Dr. Wolfgang Schleich, University of Ulm - Chair**
- **Dr. Robert Thompson – JPL coordinator**

### Speakers

- **Robert Thompson, JPL [CAL]**
- **Ernst Rasel, Leibniz U Hannover [BECCAL]**
- **Dan Stamper-Kurn, UC Berkeley [Future Directions]**
- **Brian DeMarco, U of Illinois, UC [Future Directions]**



# Direct Detection of Dark Energy

- **Dr. Jason Rhodes, JPL- Chair**
- **Dr. Kris Pardo – JPL coordinator**

## Speakers

- **Marcelle Soares-Santos, U of Michigan [DE and DM, Astrophysics perspective]**
- **Jeremy Sakstein, Portsmouth U [DE, Modified gravity and GW]**
- **Clare Burrage, U of Nottingham [DE Screen Models and Test]**
- **Sheng-Wey Chiow, JPL [DE and Modified Gravity Mission Concept]**



# Quantum Entanglement

- **Prof. Paul Kwiat, U of Illinois at UC - Chair**
- **Dr. Makan Mohageg– JPL coordinator**

## Speakers

- **Paul Kwiat, U of Illinois, UC [Deep Space Quantum Link Concept]**
- **Thomas Jennewin, U Waterloo [DE, Modified gravity and GW]**



## Optical Clock/ Equivalence Principle

- **Prof. Kurt Gibble, Penn State U - Chair**
- **Dr. Nan Yu – JPL coordinator**

### Speakers

- **Chris Oates, NIST [Physics with optical clock in space]**
- **Holger Müller, UC Berkeley [Quantum Test of Equivalence Principle in Space]**
- **Andrew Derevianko, U of Nevada, Reno [DM and fundamental symmetry with atoms]**
- **Stephan Schiller, U Düsseldorf [European perspective]**
- **Marianna Safronova, U Delaware [Theoretical perspective]**

# ISS Complex/Dusty Plasma/ Lunar Dust Research

- **Prof. Ed Thomas, U Auburn Co- Chair**
- **Prof. Truell Hyde, Baylor U – Co-Chair**
- **Dr. Inseob Hahn – JPL coordinator**

## Speakers

- **Christine Hartzell, U Maryland [Lunar Dust Research and Mitigation Report]**
- **Hubertus Thomas, DLR [PK-4 Status Report]**
- **Uwe Konopka, Auburn University [COMPACT ISS Concept]**



Q&A

