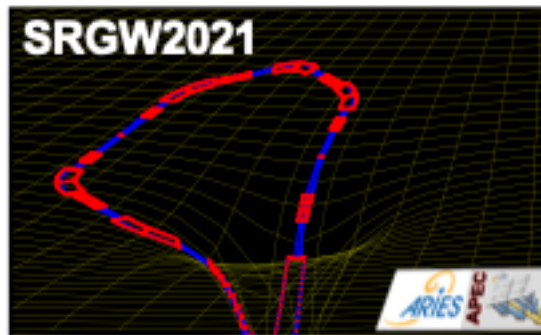


# SRGW2021 - ARIES WP6 Workshop: Storage Rings and Gravitational Waves



## Report of Contributions

Contribution ID: 1

Type: **not specified**

# **Measurement approach and sensitivities of detectors like LIGO and VIRGO**

*Thursday 18 February 2021 14:30 (45 minutes)*

**Presenter:** Dr FLAMINIO, Raffaele (LAPP Annecy )

**Session Classification:** Measurements and sensitivity (Sense and sensibility)

Contribution ID: 2

Type: **not specified**

## **Storage ring sensitivity to tides & large-scale perturbations, earthquakes, noise –examples from LEP and LHC**

*Thursday 18 February 2021 15:15 (40 minutes)*

**Presenter:** Dr WENNINGER, Jorg (CERN)

**Session Classification:** Measurements and sensitivity (Sense and sensibility)

Contribution ID: 3

Type: **not specified**

## **Update on Theoretical Effects of Gravitational Waves on Storage Rings**

*Thursday 4 March 2021 16:00 (40 minutes)*

**Presenter:** DAGNOLO, Raffaele Tito (Univ. of California San Diego (US))

**Session Classification:** Proposals and Schemes

Contribution ID: 4

Type: **not specified**

## **Storage rings as detectors for relic gravitational-wave background?**

*Thursday 4 March 2021 15:15 (45 minutes)*

**Presenter:** IVANOV, Andrei (Vienna University of Technology, Institute of Atomic and Subatomic Physics, Austria)

**Session Classification:** Proposals and Schemes

Contribution ID: 5

Type: **not specified**

## **Expected sources of gravitational waves**

*Tuesday 2 February 2021 15:45 (40 minutes)*

**Presenter:** SATHYAPRAKASH, Bangalore (The Pennsylvania State University)

**Session Classification:** Introduction to Gravitational Waves and their effects

Contribution ID: 6

Type: **not specified**

## **Response of a storage-ring beam to a gravitational wave - preliminary considerations**

*Tuesday 2 February 2021 16:25 (20 minutes)*

**Presenter:** Dr OIDE, Katsunobu (High Energy Accelerator Research Organization (JP))

**Session Classification:** Introduction to Gravitational Waves and their effects

Contribution ID: 7

Type: **not specified**

## **Detection of gravitational waves in circular particle accelerators - a proposal for the LHC**

*Thursday 4 March 2021 14:30 (45 minutes)*

**Presenter:** RAO , Suvrat (Sternwarte & U. Hamburg)

**Session Classification:** Proposals and Schemes



Contribution ID: 8

Type: **not specified**

## **Radiofrequency cavities and gravitational wave signals?**

*Thursday 11 March 2021 14:30 (30 minutes)*

**Presenters:** ELLIS, Sebastian (SLAC National Accelerator Laboratory (US)); ELLIS, Sebastian (SLAC)

**Session Classification:** Gravitational wave generation and detection

Contribution ID: 9

Type: **not specified**

## Discussion

*Thursday 11 March 2021 16:45 (20 minutes)*

**Session Classification:** Gravitational wave generation and detection

Contribution ID: **10**

Type: **not specified**

## **Discussion**

*Thursday 4 March 2021 16:40 (20 minutes)*

**Session Classification:** Proposals and Schemes

Contribution ID: **11**

Type: **not specified**

## **Discussion**

*Thursday 18 February 2021 15:55 (20 minutes)*

**Session Classification:** Measurements and sensitivity (Sense and sensibility)

Contribution ID: 12

Type: **not specified**

## Discussion

*Tuesday 2 February 2021 16:45 (15 minutes)*

**Session Classification:** Introduction to Gravitational Waves and their effects

Contribution ID: 13

Type: **not specified**

## **Ground Vibration at SSRF Site**

*Thursday 18 March 2021 14:30 (30 minutes)*

**Presenter:** Dr DENG, Rongbing (Shanghai Advanced Research Institute, Chinese Academy of Sciences)

**Session Classification:** Summary and Outlook

Contribution ID: 14

Type: **not specified**

## **A Brief History of Gravitational Waves**

*Tuesday 2 February 2021 15:05 (40 minutes)*

**Presenter:** Dr CERVANTES COTA , Jorge (ININ)

**Session Classification:** Introduction to Gravitational Waves and their effects

Contribution ID: 15

Type: **not specified**

## Using storage rings as a GW source

*Thursday 11 March 2021 15:00 (45 minutes)*

**Presenter:** CHEN, Pisin (NTU)

**Session Classification:** Gravitational wave generation and detection



Contribution ID: 16

Type: **not specified**

## **Use of atom-interferometry for possible GW detection and other gravity experiments**

*Thursday 11 March 2021 16:00 (45 minutes)*

**Presenters:** ELLIS, Jonathan R. (University of London (GB)); BUCHMULLER, Oliver (Imperial College (GB))

**Session Classification:** Gravitational wave generation and detection

Contribution ID: 17

Type: **not specified**

## Welcome

*Tuesday 2 February 2021 15:00 (5 minutes)*

**Presenters:** ZIMMERMANN, Frank (CERN); FRANCHETTI, Giuliano (GSI - Helmholtzzentrum für Schwerionenforschung GmbH (DE)); ZANETTI, Marco (Universita e INFN, Padova (IT))

**Session Classification:** Introduction to Gravitational Waves and their effects

Contribution ID: 18

Type: **not specified**

## Discussion

*Thursday 18 March 2021 15:15 (1h 15m)*

- (1) Possibility of using an LHC access shaft to house a 100m atom interferometer targeting the 1 to  $10^{-2}$  Hz range
- (2) K. Oide's GW detection by resonant betatron oscillations, for the 10 kHz range
- (3) S. Rao's GW detection by a change in revolution period, but "using low-energy" coasting ion beam without RF - sensitivity down to  $10^{-5}$  Hz?
- (4) S. Ellis' suggestion for heterodyne detection using SC RF, up to  $\sim 10^7$  Hz?
- (5) GW generated by the beam; orbital frequency,  $\sim 10^4$  Hz for LHC, and the orbital frequency multiplied by the number of circulating bunches used - combined with high-frequency detector concept

**Presenter:** ELLIS, Jonathan R. (University of London (GB))

**Session Classification:** Summary and Outlook

Contribution ID: 19

Type: **not specified**

## **Gravitational synchrotron radiation, some history revisited, and FCC-hh**

*Thursday 11 March 2021 15:45 (15 minutes)*

**Presenter:** JOWETT, John (GSI - Helmholtzzentrum für Schwerionenforschung GmbH (DE))

**Session Classification:** Gravitational wave generation and detection

Contribution ID: 20

Type: **not specified**

## **What Governs the Flow of Energy? Questions on Gravitational Impedance Matching**

*Thursday 18 March 2021 15:00 (15 minutes)*

**Presenter:** CAMERON, Peter

**Session Classification:** Summary and Outlook