

Course online on semiconductor radiation detectors 2021



Report of Contributions

Contribution ID: 1

Type: **not specified**

Particle detectors for HEP

Monday 19 April 2021 15:20 (1h 35m)

Presenter: Dr COLLINS, P.

Session Classification: Sensors, Interconnects

Contribution ID: 2

Type: **not specified**

Interaction of particles with Matter

Monday 19 April 2021 17:25 (1h 35m)

Presenter: Dr SALVAT, F.

Session Classification: Sensors, Interconnects

Contribution ID: 3

Type: **not specified**

Sensors, Interconnects

Tuesday 20 April 2021 15:00 (1h 35m)

Presenter: Dr VAHANEN, S.

Session Classification: Sensors, Interconnects

Contribution ID: 4

Type: **not specified**

3D interconexion

Tuesday 20 April 2021 17:25 (1h 35m)

Presenter: Dr PARÉS, G.

Session Classification: Sensors, Interconnects

Contribution ID: 5

Type: **not specified**

Radiation effects on Electronics

Wednesday 21 April 2021 15:00 (1h 35m)

Presenter: Dr FACCIO, F.

Session Classification: Part 1: Microelectronics

Contribution ID: 6

Type: **not specified**

Pulse Processing Electronics (Amplification/Filtering/Discrimination)

Wednesday 21 April 2021 17:25 (1h 35m)

Presenter: Dr O'CONNOR, P.

Session Classification: Part 1: Microelectronics

Contribution ID: 7

Type: **not specified**

Pulse Processing Electronics (Analog to Digital Conversion/Time to Digital Conversion)

Thursday 22 April 2021 15:00 (1h 35m)

Presenter: Dr RIVETTI, A.

Session Classification: Part 1: Microelectronics

Contribution ID: 8

Type: **not specified**

Design Methodologies

Thursday 22 April 2021 17:25 (1h 35m)

Presenter: Dr LLOPART, X.

Session Classification: Part 1: Microelectronics

Contribution ID: 9

Type: **not specified**

CMOS image and vision sensors

Friday 23 April 2021 15:00 (1h 35m)

Presenter: Dr RODRIGUEZ, A.

Session Classification: Part 2: Solid state detector technologies

Contribution ID: **10**

Type: **not specified**

Monolithic detectors, trends

Friday 23 April 2021 17:25 (1h 35m)

Presenter: Dr SNOEYS, W.

Session Classification: Part 2: Solid state detector technologies

Contribution ID: 11

Type: **not specified**

Monolithic detectors, trends

Presenter: Dr SNOEYS, W.

Contribution ID: 12

Type: **not specified**

Monolithic detectors, trends

Presenter: Dr SNOEYS, W.

Contribution ID: 13

Type: **not specified**

Introduction to Hybrid pixel detectors

Monday 26 April 2021 15:00 (45 minutes)

Presenter: Dr BALLABRIGA, R.

Session Classification: Part 2: Solid state detector technologies

Contribution ID: 14

Type: **not specified**

Applications of Hybrid pixel detectors

Monday 26 April 2021 15:50 (45 minutes)

Presenter: Dr CAMPBELL, M.

Session Classification: Part 2: Solid state detector technologies

Contribution ID: 15

Type: **not specified**

Photon Counting CT

Monday 26 April 2021 17:25 (1h 35m)

Presenter: Dr TAGUCHI, K.

Session Classification: Part 3: Applications

Contribution ID: 16

Type: **not specified**

Interface circuits for single-photon detection

Tuesday 27 April 2021 15:00 (45 minutes)

Single photons are the ultimate detection limit for electromagnetic radiation. By sensing individual photons, their energy and polarization, we know all aspects of the incident radiation. In basic sciences, single photons are at the experimental foundations of quantum mechanics and measurement theory. In applied sciences, single-photon detection and photon counting is employed in high energy physics, positron emission tomography, light detection and ranging, fluorescence lifetime imaging microscopy, quantum communications, etc.

In this lecture we will review the basics of single-photon sensing with CMOS-compatible SPADs, the different types of quenching and recharge schemes, time-to-digital converters, SPAD arrays and SiPM-based pixels.

Presenter: Dr CARMONA, R.

Session Classification: Part 2: Solid state detector technologies

Contribution ID: 17

Type: **not specified**

Mass spectrometry Imaging

Tuesday 27 April 2021 15:50 (45 minutes)

Presenter: Dr VALLANCE, C.

Session Classification: Part 2: Solid state detector technologies

Contribution ID: **18**

Type: **not specified**

Imaging and time-stamping optical photons with nanosecond resolution

Tuesday 27 April 2021 17:25 (1h 35m)

Presenter: Prof. NOMEROTSKI, A.

Session Classification: Part 3: Applications

Contribution ID: 19

Type: **not specified**

Scintillator materials

Wednesday 28 April 2021 15:00 (1h 35m)

Presenter: Dr AUFRAY, E.

Session Classification: Part 2: Solid state detector technologies

Contribution ID: **20**

Type: **not specified**

Synchrotron and FEL Applications

Wednesday 28 April 2021 17:25 (1h 35m)

Presenter: Dr BLAJ, G.

Session Classification: Part 3: Applications

Contribution ID: 21

Type: **not specified**

SiPM technology

Thursday 29 April 2021 15:00 (1h 35m)

Presenter: Dr VINOGRADOV, S.

Session Classification: Part 3: Applications

Contribution ID: 22

Type: **not specified**

Introduction to fast timing applications in Medical Physics and photosensors in fast timing scintillator detectors

Thursday 29 April 2021 17:25 (1h 35m)

Presenter: Dr SCHAART, D.

Session Classification: Part 3: Applications

Contribution ID: 23

Type: **not specified**

Large Area Single Photon Sensors, applications and readout

Friday 30 April 2021 15:00 (45 minutes)

Presenter: Prof. GASCÓN, D.

Session Classification: Part 2: Solid state detector technologies

Contribution ID: 24

Type: **not specified**

PET and SPECT

Friday 30 April 2021 15:50 (45 minutes)

Presenter: Prof. SABET, Hamid

Session Classification: Part 3: Applications

Contribution ID: 25

Type: **not specified**

Medical Imaging

Friday 30 April 2021 17:25 (45 minutes)

Presenter: Prof. SABET, Hamid

Session Classification: Part 3: Applications

Contribution ID: 26

Type: **not specified**

Closing Lecture: 78 years of semiconductor nuclear detectors, and more to come

Friday 30 April 2021 18:15 (45 minutes)

The explanation of the photo-electric effect in 1905 literally shed light on the structure of matter. Nevertheless, it still took 38 more years before the first practical solid semiconducting devices exploited this understanding for detection of ionizing nuclear particles. From then on, a succession of innovations has led to widespread use of semiconductor nuclear detectors in physics, space exploration, materials analysis and medical imaging. The silicon-based micro-(now) nano-electronics technology continues to enable much of these semiconductor sensor developments.

Presenter: Prof. HEIJNE, E.

Session Classification: Part 3: Applications

Contribution ID: 27

Type: **not specified**

Direct Conversion

Presenter: HAEMISCH, York

Session Classification: Industrial Session

Contribution ID: 28

Type: **not specified**

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Thursday 22 April 2021 16:40 (20 minutes)

Presenter: PERTL, Josef

Session Classification: Industrial Session

Contribution ID: 29

Type: **not specified**

PITEC

Wednesday 28 April 2021 16:40 (20 minutes)

Presenter: MENDES, Larissa Helena

Session Classification: Industrial Session

Contribution ID: **30**

Type: **not specified**

Welcome

Monday 19 April 2021 15:00 (10 minutes)

Contribution ID: **31**

Type: **not specified**

Introduction

Monday 19 April 2021 15:10 (10 minutes)

Presenter: GASCÓN, David (dgascon@icc.ub.edu)