

# Silicon Detectors for Particle and Nuclear Physics

*Tuesday, 9 July 2019 12:30 (1h 15m)*

Silicon technology is approximately 70 years old but thousands of years by the multitude of researchers that have been dedicated to RD; the well-established microelectronic industry is based on it. Being that the silicon is sensitive to photons (from infrared to X-rays, passing through visible light and ultraviolet) and to charged particles, we can leverage the microelectronic technology to make sensors out of silicon. Silicon sensors are used in a variety of applications including scientific experiments (High Energy Physics, Astrophysics, Photon Science, etc) as well as industrial and commercial use (cameras, etc). The basic structure is the p-n junction across which a voltage is applied. When an ionizing event occurs (a photon or a charged-particle interacting with silicon), a short current pulse ( $\sim$  few ns) is generated and detected by the read-out electronics. There are many kinds of silicon sensors and each one must be tailored according to the specific application. We'll give an overview of the state of the silicon technology and its different applications.

**Presenter:** GIACOMINI, Gabriele (BNL)