Curriculum Vitae Servoli Leonello (updated to 07-07-2022).

Leonello Servoli (08-nov-1961) graduated summa cum laude in Physics at the University of Perugia (Italy) November 15th, 1985.
Since 1991 he is a Researcher with Istituto Nazionale di Fisica Nucleare (Perugia Research Unit), currently Senior Researcher.

Main responsibilities and scientific memberships:
→ Member of the SLD (5 years), L3 (11 years) and CMS (21 years) high energy physics experiments at SLAC and CERN.
→ Member of the National Computing and Network INFN Committee (8 years) and local coordinator of the scientific INFN computing.
→ Member and Deputy of the National V Scientific INFN Committee (7 years).
→ Referee of about 30 INFN experiments, on behalf of the National V INFN Committee.
→ National coordinator of the "High Availability" INFN computing project (2 years);
→ National coordinator of the RAPID INFN experiment (4 years);
→ National coordinator of the 3D-SOD INFN experiment (3 years).
→ National coordinator of the 3DOSE INFN experiment (3 years).
→ Local coordinator of the INFNGRID computing initiative (7 years);
→ Local coordinator of the DACEL2 INFN experiment (2 years);
→ Local coordinator of the FOOT INFN experiment (6 years, in progress);
→ Member of the FP7 AIDA project (4 years);
→ Local coordinator of the RD42 experiment (8 years, in progress);
→ Member of the Italian Association of Medical Physics (AIFM, 6 years, in progress);
→ Member of the Società Italiana per la Ricerca sulle Radiazioni – SIRR (5 years, in progress);
→ National Coordinator of the HASPIDE INFN experiment (in progress);

He is the author, co-author or corresponding author of more than 450 scientific papers and conference proceedings published on international scientific journals (Scopus, Web of Science), of which more than 120 on detector development. **H-index are the following: Scopus = 59, Web of Science Citation Report = 59, Google Scholar = 84, and about 56500 citations.**
He has been in the organizing committee of several national and international conferences.
He has been teaching from 1991 at Perugia University several courses both at graduate, master and PhD levels. He has been the supervisor of more than 90 thesis works of graduate, master and Phd level for Physics, Computing and Electronic Engineering curricula.

Main fields of interest:
[A] Gaseous ionizing radiation detectors R&D:
he has worked on gaseous detectors (proportional chambers, limited streamer tubes) from 1984 to 1990 (SLD experiment at SLAC). He studied the gas mixtures to be used in the limited streamer tubes, to optimize the signal formation, reduce the dead time and the afterpulse effect, to improve the drift velocity and to obtain a non-flammable mixture. He also participated in the construction, installation and operation of the Warm Iron Calorimeter of the SLD experiment at SLAC.

[B] Solid state ionizing radiation detectors R&D : silicon microstrips:
he has worked on development and characterization of semiconductor detectors for tracking charged particles in High Energy experiments (L3 and CMS) from 1991 to present days. He has been involved in the following items:
1) Study of the sensor element for the basic sensor unit of the L3 microvertex system: single and double sided silicon microstrip sensors (1991-1994).
2) Installation and commissioning of the L3 silicon microvertex detector (1993-1995).
3) Study of the sensor element of the CMS Silicon Strip Detector single and double sided silicon microstrip sensors (1995-2000); focus on detector performance and on radiation damage resistance.
4) Construction, Installation and commissioning of CMS Silicon Strip Detector (2000-2005).
5) Development, Charcterization and Installation of thin microstriop detectors for the MicroStrip Detector (MSD) of the FOOT esperiment (2016-today)

[C] Solid state ionizing radiation detectors R&D : Active Pixel Sensors:
he has been actively working on pixel detectors for tracking charged particles in High Energy experiments (RAPS, SHARPS, VIPIX, CMS) from 2001 to present days. He has been involved in the following items:
1) test of hybrid pixel detectors for the CMS experiment, studying their response, calibration,detection efficiency;
2) development of Active Pixel Sensors, to prove that they are capable of detecting ionizing radiation with good S/N performances (S/N at least 20).
3) development and test of stacked pixel devices, to measure the direction of incoming charged particles, instead than a single point, with a precision of few degrees.
4) study of CMOS Imagers as ionizing radiation sensors, to prove that standard imagers optimized for visible light collection are also capable of ionizing radiation detection with high S/N (about 30 and more) and almost 100% detection efficiency.
5) Precision measurement of ionizing radiation interaction with solid state detectors, mainly silicon ones, using innovative experimental techniques, like charged particles impinging at grazing angle.

[D] Solid state ionizing radiation detectors R&D : Diamond Sensors both 3D, Silicon-On-Diamond and Hydrogenated Amorphous Silicon:
he has been actively developing new type of devices to detect ionizing radiation based on diamond substrate, both scCVD and pcCVD (experiments DIAPIX and 3D-SOD) and a-Si:H. These are the main branches:
1) creation of conductive paths inside the diamond bulk, or on its surface, using a focused pulsed fs laser to graphitize the diamond bulk and surface (3D diamond);
2) bonding a layer of silicon with embedded CMOS electronics, typically thinned (tens of micrometers) Monolithic Active Pixel Sensors, to a diamond substrate, both scCVD than pcCVD (Silicon-On-Diamond approach). Also this technique requires a pulsed laser to give enough energy to the silicon surface to be transmitted to the diamond surfece producing a rearrangement of the crystals structure creating an amorphous interface mechanically resistant and hence obtaining a single device with finely pixellated readout.
3) development of a-Si:H sensors, both planar than 3D, for single ionizing radiation detection and flux measurements.

[E] Development of devices for medical applications.
he is working to apply ionizing radiation sensors for use in the medical field. This research is structured in different approaches:
1) development of a wireless real-time dosimeter for medical operators in Interventional Radiology procedures; he his the National Coordinator of an INFN project (RAPID), aiming to produce a dosimeter capable of real-time recording of dose-rate, wireless data transmission, and linearity in the entire range of dose-rate due to X-ray photons diffused by the patient's body;
2) measurement of the dose absorbed during medical procedures and identification of criteria to reduce the dose absorbed by the operators;
3) development of new methodologies to measure the beam profile of radiotherapeutic beams using CMOS imagers (patent obtained);
4) design and test of new type of diamond detectors for dosimetry of small field photon beams;
5) design and test of a-Si:H diodes for fluximetry of beams at accelerators
6) use of SiPM as direct detection devices for ionizing radiation beams.
7) use of CMOS Imaging Sensors as detectors for a probe for radio-guided surgery.

[F] Scientific Computing.
he has been actively working on the definition, development and testing of computing models and computing facilities, devoted to the scientific computing in several areas (MONARC, GRID, MACGO) from 1999 to 2011. He has been local responsible of several projects and has been involved mostly in the following items:
1) definition of the computing model for the LHC experiments;
2) study of performance of an open source batch system and development of optimization tools;
3) use of open source virtual operating systems to implement a flexible batch system on demand;
4) development of a framework to implement scientific computing programs on Graphic Processing Units.
5) development of a dedicated system for Level-1 triggering using the tracker information for CMS experiment at LHC.