

CV

Domenico della Volpe

Current position(s): Associate professor or similar

Academic age: 25 year(s) 5 month(s)

Education

Degree	Organisation	Duration
PhD / Dr.: Study of W boson production at LEP II with L3 detector	University of Naples Federico II, IT Department of Physics, Faculty of Science	03.1996 - 06.1998 2 year(s) 4 month(s)
Master: Study of a read-out system for the KLOE experiment at DAΦNE	University of Naples Federico II, IT Physics	01.1993 - 03.1994 1 year(s) 3 month(s)

Employment

Role	Organisation	Duration
Associate professor or similar	Université de Genève - GE, CH Département de Physique Nucléaire et Corpusculaire, Faculté de Sciences	06.2022 - Present 1 year(s) 6 month(s)
Senior researcher	Université de Genève - GE, CH Département de Physique Nucléaire et Corpusculaire, Faculté de Sciences	03.2013 - 06.2022 9 year(s) 4 month(s)
Technical Associate	CERN	11.2009 - 03.2013 3 year(s) 5 month(s)
Senior researcher	University of Naples Federico II, IT	03.2004 - 12.2012 8 year(s) 10 month(s)

Role	Organisation	Duration
	Department of Physics, Faculty of Science	
Visiting Scientist	European Organization for Nuclear Research, CH Physics Division	10.2008 - 10.2009 1 year(s) 1 month(s)
Research associate / Scientific collaborator	INFN Sezione di Napoli, IT Department of Physics	03.2001 - 03.2004 3 year(s) 1 month(s)
Junior researcher / Postdoc Prof Sergio Patricelli	INFN Sezione di Napoli, IT Department of Physics	07.1998 - 03.2001 2 year(s) 9 month(s)

Major achievements

Achievement 1

In 2019, I conceived a new handleable, lightweight, and wireless, medical device and created the project (POSICS - POSition-sensitive SiPMs Compact & Scalable Beta/Gamma Simulation, confirmed by laboratory testing demonstrates it can achieve a sub-millimeter precision on a 3 cm x3 cm sensitive area with only a few channels.

This is possible thanks to a new UV-position sensitive device developed by the Foundation Bruno Kessler (FBK).

The project was one of 170, out of 1211, selected for a grant of 100'000 EUR in the ATTRACT EU call (<https://attract-eu.com>).

The project, one year long, was carried on in collaboration with the Foundation Bruno Kessler (FBK). After completion, I applied to a second ATTRACT-EU call for a demonstrator at TRL 6, and I was awarded a grant of 500'000 EUR.

The consortium has been enlarged by including the PinLab from the Hopitaux Universitaire of Geneve. We are currently engineering the device, to start its test in the laboratory first and on small rodents next year.

[1] conference-poster. Detection module based on position-sensitive large-area Silicon photomultipliers - F. Acerbi, Fabio; A. Nagai, S. Merzima. Ventura Barroso, D.della Volpe, A. Gola - PSD12: The 12th International Conference on Position Sensitive Detectors - 2021. [Open Access](#).

Achievement 2

When staff at University of Naples, I was involved in the development and construction of the Resistive Plate Chamber (RPC).

During LHC construction, the production of RPC for all INFN, experiments (ATLAS, CMS, OPERA, ARGO, Babar) was on the critical path as delays caused a pile-up in the producing company RPC.

This was putting at risk the LHC installation schedule and was set as critical on CERN watch list.

I was asked by INFN to control the total production, across all experiments, and try to increase the production capability of the company, given my success in increasing ATLAS RPC production yield.

Introducing changes in the chain, production grew from 8 per day up to 24 RPC per day.

We delivered more than 10'000 detectors in less than 3 years, completing the whole production within LHC installation schedule deadline.

Later I moved to CERN for the commissioning of the muon barrel trigger that was late and had a problem in the time alignment system.

When the Project manager had a breakdown, leaving the project at risk, I suddenly reorganized the effort for commissioning, and I found a new technique to calibrate the system from data.

I develop the analysis to produce the calibration constants, and thanks to this all the 350'000 channels were aligned within 1 ns as per specs and the system was ready for the first beam of LHC.

I become therefore the new PI, and after a few months, I become the coordinator of the whole L1 trigger of ATLAS.

I studied the process $B_s^0 \rightarrow \mu\mu$ for the project of my Ph.D., the first such analysis in ATLAS, later published in PLB.

[1] journal-article. Aad, G., Abbott, B., Abdallah, J., Abdel Khalek, S., Abdelalim, A. A., Abdinov, O., Abi, B., Abolins, M., AbouZeid, O. S., Abramowicz, H., Abreu, H., Acerbi, E., Acharya, B. S., Adamczyk, L., Adams, D. L., Addy, T. N., Adelman, J., Adomeit, S., Adragna, P., ... Zwalinski, L. (2012). Search for the decay $B \rightarrow \mu\mu$ with the ATLAS detector. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics*, 713(4–5), 387–407.

[2] journal-article. Aad, G., Abbott, B., Abdallah, J., Abdelalim, A. A., Abdesselam, A., Abdinov, O., Abi, B., Abolins, M., Abramowicz, H., Abreu, H., Acerbi, E., Acharya, B. S., Adams, D. L., Addy, T. N., Adelman, J., Aderholz, M., Adomeit, S., Adragna, P., Adaye, T., ... Zwalinski, L. (2012). Performance of the ATLAS trigger system in 2010. *European Physical Journal C*, 72(1), 1–61.

[3] journal-article. Aielli, G., Aloisio, A., Alviggi, M., Aprodu, V., Bocci, V., Brambilla, E., Bartos, D., Buda, S., Camarri, P., Chiodi, G., Chiodini, G., Ciapetti, G., Cardarelli, R., Canale, V., Carlino, G., Conventi, F., Cataldi, G., Constantin, S., De Pedis, D., ... Zanello, L. (2006). The RPC first level muon trigger in the barrel of the ATLAS experiment. *Nuclear Physics B - Proceedings Supplements*, 158(1 SUPPL.), 11–15.

[4] conference-paper. Pastore, F., Vari, R., Veneziano, S., Nisati, A., Bocci, V., Petrolo, E., Pasqualucci, E., Aloisio, A., Alviggi, M. G., Canale, V., Caprio, M., Carlino, G., Conventi, F., De Asmundis, R., Della Pietra, M., Della Volpe, D., Iengo, P., Izzo, V., Patricelli, S., & Salamon, A. (2005). The ATLAS level-1 Barrel muon trigger performances. *IEEE Nuclear Science Symposium Conference Record*, 1, 608–611.

Achievement 3

In 2013 I joined the CTA Project, as project leader of SST-1M telescope.

I was the main actor in the design of the system and in particular of the Cherenkov camera.

I was also PI of a R'Equip grant for 350'00 CHF. We developed in collaboration with Hamamatsu the largest monolithic SiPM (1 cm²) and also a light funnel using the cheap injection molding technique but achieving an extremely good optical quality.

This approach has an exceptional performance/cost ratio, therefore I proposed it to the LHAASO collaboration who decide to adopt it for their Cherenkov Telescope. I took care of the adaptation of the design and also manage to keep the whole LHAASO production in Switzerland, to save the know-how. For this UNIGE was granted the status of full member of LHAASO.

I also was the main editor of the LHAASO Science book and contributing author to the most relevant paper.

I am presently the the chair of LHAASO editorial board.

In December 2019, the LST management asked me to become their Lead System Engineer. They need a high-profile scientist to bring to success the completion of the Critical Design Review they underwent.

During this review process, a series of showstoppers, which needed to be addressed, were identified together with the lack of a general plan for the final closing of the process, requiring the completion of many other activities.

I played a key role in this phase, by tackling the showstoppers identified in the review, and elaborating a plan for the CDR closing. In less than six months all critical items were addressed and the CDR was declared officially passed in June 2020, even if not yet closed. This convinced SERI, to grant me the resources to hire an engineer for this activity.

[1] journal-article. Ultrahigh-energy photons up to 1.4 Peetaelectronvolts from 12 γ -ray Galactic sources

Cao et al. - Nature - 2021. [DOI](#).

[2] journal-article. Peta–electron volt gamma-ray emission from the Crab Nebula

- Cao et Al - Science - 2021. [DOI](#). [Open Access](#).

[3] journal-issue. The Large High Altitude Air Shower Observatory (LHAASO) Science Book (2021 Edition) LHAASO Collaboration - Chin.Phys.C 46 - (3) - 2022. [Open Access](#).

[4] journal-article. Design, optimization and characterization of the light concentrators of the single-mirror small size telescopes of the Cherenkov Telescope Array

- J. A. Aguilar, A. Basili, V. Boccone, F. Cadoux, A. Christov, D. della Volpe, T. Montaruli, L. Platos, M.Rameez - Astroparticle Physics - 2015

. [DOI](#). [Open Access](#).

[5] journal-article. An innovative silicon photomultiplier digitizing camera for gamma-ray astronomy -

M. Heller, E. jr Schioppa, A. Porcelli, I. Troyano Pujadas, K. Zięta, D. della Volpe, T. Montaruli, F. Cadoux, Y. Favre, J. A. Aguilar, A. Christov, E. Prandini, P. Rajda, M. Rameez, W. Bilnik, J. Błocki, L. Bogacz, J. Borkowski, T. Bulik, A. Frankowski, M. Grudzińska, B. Idzkowski, M. Jamroz, M. Janiak, J. Kasperek, K. Lalik, E. Lyard, E. Mach, D. Mandat, A. Marszałek, L. D. Medina Miranda, J. Michałowski, R. Moderski, A. Neronov, J. Niemiec, M. Ostrowski, P. Paško, M. Pech, P. Schovanek, K. Seweryn, V. Sliusar, K. Skowron, Ł. Stawarz, M. Stodulska, M. Stodulski, R. Walter, M. Więcek & A. Zagdański - The European Physical Journal C - 2017. [DOI](#). [Open Access](#).