

Sergio Grancagnolo

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Current/past positions

- 2022-now Ricercatore a tempo determinato tipo B, Università del Salento, Italy
2008-2022 Postdoc position, Physics Dep., Humboldt-Univ. zu Berlin, Germany, exp. ATLAS
2005-2008 Assegno di ricerca, Dip. Fisica, Università del Salento, Italy, exp. ATLAS

Education

- 2002-2005 Università di Trieste & Université de la Savoie, French-Italian Ph.D.
Thesis: "Hadronic B decays to double charm final states", exp. BaBar
Tutors: L. Lanceri, J. P. Lees
1996-2001 Università di Roma "La Sapienza", Laurea *cum laude*, Nuclear and subnucl. physics
Master Thesis: "High Efficiency Reconstruction of the B mesons at BaBar"
Tutor: F. Ferroni

Appointments - Physics Analyses

ATLAS Collab.

5/2022-now *Analysis Contact*

Search for single production of vector-like quarks (T quark with charge $+2/3$ or Y quark with charge $-4/3$) decaying into Wb , where W boson decays leptonically (electron or muon). ~ 10 people involved, under the "Heavy Quark and Tops" physics subgroup (~ 140 members). Leading role, supervising two PhD students, run code, write documentation, to bring analysis to publication.

- 1/2018-12/2021 *Non-collision background (NCB) convener*
Subgroup of Data Preparation Coordination (~50 members, 15 actives). Characterisation and mitigation of beam-halo, beam-gas and cosmic-ray background sources, recommendations for physics groups affected, rate estimation, comparison with simulations, on-line beam quality feedback to LHC. (Bi)weekly meetings organization. Report to ATLAS plenary weekly, on behalf of data preparation. Activities presented at national german physics society (DPG2021). Contact Editor, in preparation: Pub Note on NCB on-line infrastructure, paper on NCB studies in Run-2.
- 4/2020-9/2022 *Editorial Board member*
Heavy Lepton Multiplet Search in 3/4 lepton final state (type-III seesaw), ~15 people involved. Analysis under the “Lepton + X” (LPX) physics subgroup (~200 members). Published paper Eur. Phys. J. C 82 (2022) 988.
- 5/2020-3/2021 *Editorial Board member*
Heavy Lepton Multiplet Search in 2 lepton final state (type-III seesaw), ~15 people involved. Analysis under the LPX physics subgroup.
Published paper DOI:10.1140/epjc/s10052-021-08929-9.
- 6/2019-9/2020 *Analysis Contact*
Heavy Neutral Lepton searches with displaced vertices. Setting up transition to most recent Athena software release. PhD student supervision: random track crossing background implementation. Presented at the Analysis Software Group (ASG) general meeting. Organization of weekly meetings, reports to UEH physics subgroup. Feedback on usage of ABCD method tools.
- 9/2020-8/2023 *Analysis Team member*
Heavy Neutral Lepton searches with displaced vertices, ~15 people involved. Analysis under the “Unconventional Signatures and Exotic Higgs” (UEH) physics subgroup (~160 members). PhD student supervision on estimating random track crossing as main background source. PhD student supervision on providing combined limit exclusion plots. New channels and dataset extended to full Run-2 statistic. Published paper Phys. Rev. Lett. 131, 061803.
- 2/2017-6/2019 *Analysis Team member*
Heavy Neutral Lepton searches with displaced vertices. PhD student supervision on interaction point resolution studies, for tracking recommendations. Joint “Prompt and Displaced Heavy Neutral Lepton Search” paper published DOI:10.1007/JHEP10(2019)265. Analysis presented at ATLAS-D 2018.

- 9/2015-11/2017 *Top analysis reconstruction convener*
Organisation of weekly meetings of the Top Reco subgroup (~ 400 people) with the conveners of the Top group (~ 500 people) involving other Top subconveners and active teams performing Top quark related analyses (20-30 people). Contribution to the weekly digest news. Maintenance of the common TopAnalysis software, release coordination, implementation of the recommendations from combined performance subgroups. Maintenance and validation of common TOPQ data derivation format. Reports to the ASG and Derivation Primary Data coordination weeklies. Reports at the Top plenary during Physics and Performance (P&P) weeks (4). Support to physics analyses (next four items below).
- 3/2017-8/2018 *Analysis Team member*
“Search for charged Higgs bosons decaying into tb ”, published DOI:10.1007/JHEP11(2018)085. Liaison with combined performance and MC contacts. Ensuring maintenance and implementation of recommendations into the software infrastructure. Supervision of a PhD student (BDT training, ℓ +jets signal region studies)
- 1/2016-12/2018 *Analysis Team member*
“Search for single production of vector-like quarks decaying into Wb ” ATLAS-CONF-2016-072, DOI:10.1007/JHEP05(2019)164
- 8-9/2015 *Analysis Team member*
“ $t\bar{t}$ production cross-section in dilepton and lepton+jets channels” ATLAS-CONF-2015-049. Published results presented at DIS2019.
- 7/2015 *Analysis Team member*
“ $t\bar{t}$ production cross-section in $e\mu$ events” ATLAS-CONF-2015-033. Published results presented at DIS2019.
- 10/2013-4/2015 *Paper Contact Editor*
“New quark searches in the same-sign dilepton/trilepton final state” DOI:10.1007/JHEP10(2015)150
- 11-12/2012 *Conference note Contact Editor*
“Same-sign dilepton plus b-jet search” ATLAS-CONF-2013-051
- 7-9/2012 *Conference note Contact Editor*
“Search for b' , $T_{5/3}$, and 4-top in the same-sign dilepton channel” ATLAS-CONF-2012-130

10/2011-4/2012	<i>Analysis Team member</i> “Same-sign $t\bar{t}$ and fourth-generation down-type quarks” DOI:10.1007/JHEP04(2012)069
4-8/2011	<i>Analysis Team member</i> “Inclusive search for same-sign dilepton signatures” DOI:10.1007/JHEP10(2011)107
2009-2010	Measurement of charged particle multiplicities with events at 2.36 TeV energy collisions
2006-2008	Search of signatures for decay of supersymmetric particles, study of the neutralino spin
2003-2005	First analysis of hadronic B decays into D_{sJ}^+ particles
2002-2003	Analysis of the decay channel $B^0 \rightarrow D^{(*)+}D^{(*)-}$, measure of CKM unitary angle β
2002-2003	Reconstruction efficiency for low momentum pions using charged D^* decay samples
2000-2001	Reconstruction of hadronic B meson decays using high efficiency techniques

Appointments - Detector Operations

ATLAS Collab.

1/2022-now	<i>SCT Data Quality Coordinator</i> The Silicon Microstrip Tracker (SCT, ~ 200 members, ~ 20 actives in operations) is an ATLAS subdetector used for reconstructing the tracks of charged particles. The quality of the data collected is analysed at various stages, to discover as early as possible any system defect, and lately to assess the events that will end in the lists of good runs. While LHC is operating in data taking mode, this role ensures that instruments to evaluate data quality are working, and up-to-date; shifters are prepared; relevant information is weekly propagated between SCT and Data Preparation Coordination (DPC) 2-4 times a week.
1/2021-9/2021	Inner Detector Detector Control System (DCS) watcher in control room (ACR) and reserve shifter
7/2020-3/2022	Development of control software for new SCT power supplies. Use of WinCC OA software for automatic creation of data points needed. Presented at EPS2021, poster on “The SCT performance and operational experience in Run-2” from the published paper [arXiv:2109.02591].

9/2015-10/2016 *On-call DCS/DAQ expert* for semiconductor tracker (SCT)

12/2014-5/2016 *Shift Leader* in ACR

10/2013-12/2014 *SCT reconstruction expert*
Performance studies on Lorentz angle changes for radiation aging.

2009-2012 Simulation and performance studies for future upgrades in the Inner Detector (IBL TDR)

5-12/2012 *Pixels Run Coordinator*

3/2010-6/2011 *On-call Pixels DCS expert*
Substitutions of TX transmitter laser devices

11/2009-2/2011 *Pixels shifter* in ACR

2007-2008 Development and maintenance of the muon trigger event filter software.
Investigate possibility to reconstruct long living particles decaying in the muon spectrometer.

2006-2007 Study of rejection of in flight decays of light mesons, to reduce low p_T muon trigger rates

BaBar Collab.

3-8/2003 Silicon Vertex Tracker operation manager

Appointments - Software

ATLAS Collab.

9/2021 Computing Tutorial “Introduction to ATLAS Data model”, ATLAS-D Göttingen

2/2017-now *GIT Merge Request shifter (expert from 1/2018)*
Review of software code involving memory handling, big changes and new implementations. Approving only high quality changes respecting coding rules.

Awards and Honors

8-9/2005 Fondazione Della Riccia grant (7200 euro), based at Univ. of California Irvine

2002-2004 Università Italo-Francese grant (5000 euro) to visit LAPP

Society memberships

2010-2011 Subscribed to the German Physical Society (DPG)

2002-2004 Subscribed to the Italian Physical Society (SIF)

International cooperation

9/2020 Member of the organizing committee for ATLAS-D (Berlin 2020)

2008-2022 Based at the European Organization for Nuclear Research (CERN)

2/2006 Visit to the Budker Institute of Nuclear Physics (BINP, Novosibirsk).

- 10/2005 Visit to Paul Scherrer Institut (Zurich, CH)
- 3-8/2003 Based at the Stanford Linear Accelerator Center (SLAC)
- 2003-now Activity reports at ATLAS and BaBar collaboration meetings and workshops
- 2001-2005 Frequent visits to the SLAC laboratory (California). Total time: about one year
- 2003-2004 One year at the Laboratoire d'Annecy-le-Vieux de Physique des Particules (LAPP)
- 2003-now Participation with oral and poster presentations to international conferences
 Lasts: IPA2022 (ATLAS+CMS, plenary), TevPA2021, EPS2021, DIS2019 (ATLAS+CMS), ICPPA2017, EPS-HEP 2015, Blois-2013 (ATLAS+CMS)

Outreach

- 10-11/2020 Invited video contribution to “I Love Scienza”, “Fondazione De Sanctis” (On. Lorenzin)
- 2009-now CERN guide for official surface and ATLAS underground visits.
- 2010-2011 Organisation of the Humboldt-Universität visits at CERN
 Participation to events (CERN Open Days, Fiera del libro, masterclasses)

Teaching Activity

- 3/2023-now Teaching “Fisica Generale I” (63h/year) at Ingegneria dell’Informazione
- 9-6/2021 Teaching Physique at “Collège Calvin”, Genève (6h/week, 160h total)
- 2011-2012 Problem classes supervisor for Experimental Particle Physics Master course (HU-Berlin) for a total of 16 hours
- 2006-2008 Seminars for PhD students (Catania, Lecce, Novosibirsk, Irvine, LAPP) for a total of 12 hours
- 10/2001-1/2002 Teacher of “*Elettronica*” and “*Sistemi*” at the “G.Boole” I.T.I.S. of Genazzano (Rome)

Career supervision

- 2019-2022 Supervising 1 PhD student
- 2015-2018 Supervising 4 PhD students, published note on $H^+ \rightarrow bt$, single-VLQ
- 2009-2014 Completed 2 PhD students, 1 master student
 on searches of exotic particles in same-sign dilepton channel with ATLAS data.
 Completed 1 diploma student on optical link control for IBL with PVSS software.
 Supervising 2 PhD student on data analysis, 1 PhD on SCT performances.
 Physics Dep., Humboldt-Universitaet zu Berlin, Germany, exp. ATLAS
- 2006-2008 Completed 1 PhD students, on the ATLAS Muon Trigger system,

Dip. Fisica, Università del Salento, Italy, exp. ATLAS

Summary of Scientific Achievements

Web Of Science Citation Report: 975 public., 58408 cit., H-index 118

Google Scholar Citations Datab.: All (Since 2017) 239108 (132199), h-index: 226 (169)

Ranked number 10 in Top Italian Scientists Experimental HEP & Astrophysics (Oct 2021)

http://www.topitalianscientists.org/TIS_HTML/Top_Italian_Scientists_Experimental_HEP_Astrophysics.htm

Computing skills: C++, ROOT, Python, L^AT_EX, PVSS, Perl, fortran

Spoken languages (level): Italian (mother tongue), English (fluent), French (fluent), German (rudimentary), Russian (rudimentary).