



# Curriculum Vitæ of Shahram Rahatlou

## Personal Information

Email [shahram.rahatlou@uniroma1.it](mailto:shahram.rahatlou@uniroma1.it)  
Homepage <http://www.roma1.infn.it/people/rahatlou/>

## Education

**PhD in Physics**, dissertation on “*Observation of Matter—Anti-matter asymmetry in the B0 meson system*”, October 2002, University of California, San Diego

**Laurea in Fisica** (110/110 cum laude), February 1998, Sapienza Università di Roma.  
thesis title: “*Simulazione della camera a deriva centrale dell’esperimento BaBar*”

## Appointments

**Head of the Physics Department, Sapienza Università di Roma**, 1/11/2021 - present

**Full Professor, Sapienza Università di Roma**, 4/11/2019 - present

**Associate Professor, Sapienza Università di Roma**, 1/3/2008 - 3/11/2019

**CERN Scientific Associate**, 1/3/2017 - 29/2/2018

**CERN-INFN Fellow**, 1/3/2011 - 31/7/2011

**CERN-INFN Fellow**, 1/3/2010 - 30/9/2010

**Assistant Professor, Sapienza Università di Roma**, 1/1/2005 - 28/2/2008

Professore a contratto with “Rientro dei Cervelli” fellowship

**Postdoctoral Research Assistant, University of California, San Diego**, 1/12/2002 - 31/12/2004

**Graduate Research Assistant, University of California, San Diego**, 1998-2002

## Abilitazioni

**Abilitazione scientifica Nazionale tornata 2013, settore 02/A1**, 28.11.2014 (valid until 28/11/2020)

**Abilitazione scientifica Nazionale tornata 2012, settore 02/A1**, 23/01/2014

## Awards

**2004 Mitsuyoshi Tanaka award** of the American Physical Society for the best dissertation in Experimental Particle Physics in the United States ( <http://bit.ly/tanaka2004> )

## Scientific and society memberships

2005 - present CERN (European Laboratory for Particle Physics), scientific associate

2003 - 2004 Fermilab (Fermi National Accelerator Laboratory), scientific associate

1998 - 2004 SLAC (Stanford Linear Accelerator Center), scientific associate

## Commissions of Trust

2022 - present Elected member of the Academic Senate of Sapienza Università di Roma

2019 Member of the Scientific Committee of *Laboratoire de Physique de Clermont*, Clermont-Ferrand, France



2018	Referee for Ministero dell'Istruzione dell'Università della Ricerca (MIUR) for PRIN 2017
2015 - 2018	Scientific referee for the Swiss National Science Foundation (SNF)
2018	Referee for fellowships at Swiss Federal Institute of Technology Zurich (ETHZ)
2018	Scientific referee for the Belgium Fund for Scientific Research (FNRS)
2018	Scientific referee for the Netherlands Organisation for Scientific Research (NWO)
2017-2018	Scientific referee for the Australian Research Council (ARC)
2017	Scientific referee for the Hong Kong Research Grants Council (HKGRC)
2016 - 2017	Member of Commissione di Ricerca Sapienza for Faculty of Science Faculty (Macroarea A) in charge of selection and assignment of research grants at Sapienza
2016	Referee for Agenzia Nazionale per la Valutazione del sistema Universitario e della Ricerca (ANVUR) for the VQR 2011-2014 campaign
2015 - 2017	Chair of the <i>Commissione di Assegni di Ricerca</i> (Postdoctoral fellowship selection committee) of Laboratori Nazionali di Gran Sasso
2015	Scientific referee for the <i>Scientific Independence of young Researchers (SIR)</i> program of Ministero dell'Istruzione, dell'Università e della Ricerca
2014 - 2016	Member of the Collaboration Board Advisory Committee of the CMS experiment at CERN
2014 - 2016	Scientific Referee for the SHIP experiment proposal in Commissione Scientifica Nazionale 1 of INFN. SHIP is a beam-dump experiment for an estimated cost of 60 MCHF for the detector and 100 MCHF for the beam facility to be built at CERN
2010 - present	Referee for Physics Letters B Journal (PLB)
2010 - present	Referee for Journal of High Energy Physics (JHEP)

## Institutional Responsibilities

Nov 2019	Elected representative of Full Professors in the Board of the Physics Department (Giunta di Dipartimento)
Nov 2019	Member of <i>Collegio dei Docenti</i> (Scientific Board) of the PhD program in Physics
2015- present	Contact person for INFN-DOE summer student exchange program at INFN Rome Details at <a href="https://web.infn.it/DOE-INFN-SSEP/">https://web.infn.it/DOE-INFN-SSEP/</a>
2014 - 2016	Delegate of Department Chair for Undergraduate Affairs Office. Responsibilities included the planning of academic calendar for both bachelor and master programs, organisation of monthly undergraduate defence committees
2012 - present	Member of <i>Collegio dei Docenti</i> (Scientific Board) of the PhD program in Accelerator Physics
2013	Member of committee to define the procedure and selection criteria for newly established Teaching Awards (Riconoscimenti all'insegnamento) in Faculty of Science
2011-2013	Elected representative of Associate Professors in the Board of the Physics Department (Giunta di Dipartimento)
2010	Member of the PhD Admissions Committee of the Physics Department



## Scientific and Research Coordination Responsibilities

<i>Nov 2018 - present</i>	Coordinator of CMS Tier 2 Computing facility at Sapienza
<i>2016 - 2018</i>	Physics coordinator of CMS experiment at CERN
<i>2017 - present</i>	Member of ECoM2x committee of CMS experiment at CERN to devise computing model and needs for High-Luminosity LHC phase
<i>2016-2018</i>	Member of Management Board of CMS experiment at CERN
<i>2016-2018</i>	Member of Executive board of CMS experiment at CERN
<i>2016 - 2018</i>	Chair of the Physics Office of CMS experiment at CERN
<i>2016 - 2018</i>	Member of Phase-II Upgrade Steering Group of CMS experiment at CERN
<i>2014 - 2016</i>	Convener of the “Beyond Standard Model” working group of the “What Next?” effort at INFN. Co-editor of white paper on long-term strategy of Commissione Scientifica Nazionale 1
<i>2013 - 2016</i>	Team leader of CMS group in Rome, with an annual budget of €250-300k euro
<i>2013- present</i>	Chair of several internal CMS review committees, including search for dark matter candidates in events with single lepton and missing transverse energy, and events with single boosted-top and missing transverse energy
<i>2013</i>	Coordinator of SUSY Montecarlo working group in CMS (~20 physicists). Group acting as a liaison between theorists and analysis groups to provide the correctly generated samples (Management Level 3)
<i>2011 - 2012</i>	Convener of Exotica Physics Analysis Group of CMS (~400 physicists). The largest physics group in CMS counting hundreds of members and covering a wide spectrum of searches for direct new physics signatures, excluding supersymmetry. (Management Level 2)
<i>2009-2012</i>	Coordinator of Physics Activities of CMS-Italia Collaboration. Italy represents 12% of the whole CMS collaboration and is extremely active in physics analysis. During my tenure I helped fostering collaborations between the smaller groups and direct some of the efforts towards searches for new physics.
<i>2007-2009</i>	Coordinator of global event reconstruction of the CMS experiment (~100 physicists) during the preparation for the first LHC collisions in 2008 (Management Level 2)
<i>2006</i>	Coordinator of electron and photon reconstruction in CMS (Management Level 3)
<i>2004</i>	Coordinator of the BABAR event reconstruction (Management Level 2)
<i>2000-2001</i>	Operation manager of the BABAR online data acquisition system

## Organisation of Scientific Conferences and Workshops

<i>2019</i>	Member of the Scientific Advisory Group of CKM Workshop 2020 in Melbourne, Australia
<i>2018</i>	co-Chair of program committee of LHCP 2019 international conference in Puebla, Mexico May 2019
<i>2017</i>	Program committee of LHCP 2018 international conference in Bologna, Italy in June 2018



2016	Program committee of LHCP 2017 international conference in Shanghai, China in May 2017
2015	Organising committee of TOP2015 conference, Ischia, Italy
2015	Organising committee of "101-esimo Congresso della Società Italiana di Fisica", Rome, Italy
2013	International Advisory committee of Second IPM meeting on LHC Physics, Tehran, Iran
2013	Organising committee of ATLAS/CMS/LHC physics workshop in Genova, Italy
2013	International Advisory committee of "Aspen Higgs Quo Vadis", 10-16 March 2013 Aspen Center for Physics
2012	Organiser of CMS Exotica Workshop in Rome
2011	Organiser of CMS Exotica Workshop in Rome (Both scientific program and local organisation)
2010	Chair of the local organising committee of Incontri Italiani di Fisica di Alte Energie (IFAE) 2010
2005	International organizing committee for the third international workshop on CKM physics

### PhD defence committee and referee

2019	David Vannerom, "Search for new physics in the dark sector with the CMS detector", Joint PhD at ULB&VUB in Brussels, Belgium
2018	Member of jury for final exam of Ph.D. in Physics at Padova University
2017	Alberto Escalante del Valle, "Measurement of associated Z+charm production and search for W' bosons in the CMS experiment at the LHC", Facultad de Ciencias Físicas, CIEMAT, Madrid, Spain
2017	Riccardo Manzoni, "Physics with photons with the ATLAS Run 2 data: calibration and identification, measurement of the Higgs boson mass and search for supersymmetry in di-photon final state", Università statale degli studi di Milano and Université Pierre et Marie Curie, Paris
2016	Olof Lundberg, "Searches for Dark Matter and Large Extra Dimensions in Monojet Final States with the ATLAS Experiment", Stockholm University
2015	Valentina Gori, "Search for a high mass Higgs-like boson produced via Vector Boson Fusion, in the decay channel $H \rightarrow ZZ \rightarrow l+l-qq^-$ ( $l = e, \mu$ ) with the CMS detector", Università di Firenze, Florence
2014	Gerrit Van Onsem, "Search for new heavy quarks with the CMS detector at the Large Hadron Collider", Vrije University Bruxelles, Brussels, Belgium
2013	Andrea Massironi, "Search for a Higgs Boson in the $H \rightarrow W+W- \rightarrow l\nu l\nu$ channel at CMS", Università di Milano Bicocca, Milan
2012	Arabella Martelli, "First measurement of the WZ production cross section with the CMS detector at the LHC", Ecole Polytechnique Palaiseau, France
2012	Federico De Guio, "Search for a heavy gauge boson W' in the final state with electron and large missing transverse energy in pp collisions at 7 TeV", Università di Milano Bicocca, Milan



## Outreach and third mission

2018-2019 Tutor at Liceo Scientifico Augusto Righi, Roma for the Art & Science project. This project is aimed at scientific outreach at high school level across Italy, using art for scientific communication. Details at <https://web.infn.it/artandscience/>

2018-2019 Tutor at Liceo scientifico Giulia Falletti di Barolo, Roma for the LAB2GO project. This project aims at archiving and documentation of physics experiences at laboratories across high schools in Rome. Details available at <https://web.infn.it/lab2go/>

2015 Invited public lecture on `Search for Dark Matter` at an event for the 100th anniversary of General Relativity at Università di Milano Bicocca, Milan



## Timeline of research activities

2016 - 2018	Coordination of physics program of CMS experiment at CERN, comprising more than 2000 physicists
2015	Joined the SABRE experiment aiming at verifying the DAMA/LIBRA result on annual modulation effect due to dark matter candidates
2015	Search for dijet resonances, Dark matter candidates, and di-photon resonances with the 13 TeV data at LHC
2014 - 2016	Coordination of the “Beyond Standard Model” working group of the “What Next?” effort at INFN and of the long-term strategy of Commissione Scientifica Nazionale 1. This is process similar to Snowmass in the US aiming at defining the research priorities for INFN in the next 10 years and the most compelling physics cases to be carried out at the colliders.
2014	Search for heavy Higgs boson candidates in di-photon final state. Co-supervision of my graduate student's PhD thesis on the search of new heavy resonances in di-photon final state and with a mass below 1 TeV
2014 - 2015	R&D project for a radiation-hard compact calorimeter. This is a project to identify a feasible solution for an electromagnetic calorimeter for the forward region of the CMS detector during the Phase II operation of the LHC with increased instantaneous luminosity, starting in 2025.
2013 - 2015	R&D project of new detectors with extreme timing resolution. The project aims at the study and potential use of secondary emission of electrons from the surface of micro-channel plates (MCP) for a precise timing measurement of electromagnetic showers.
2011 - 2012	Convener of Exotica Physics Analysis Group of CMS comprising about 400 physicists
2010 - 2013	Search for long-lived particles with a novel technique using the measurement of time of flight of photons with the CMS electromagnetic calorimeter (ECAL)
2010 - 2012	Discovery of the Higgs boson decaying in two photons. First studies for an exclusive search and the Fermiophobic scenarios. These studies produced several papers and contributed to the discovery of a new boson at 125 GeV, cornerstone of the 2013 Nobel Prize. Collaboration with theorists for the interpretation of the Higgs results
2009 - 2010	Setup of procedure and software for the inter-calibration of the ECAL with a dedicated high-rate stream of neutral pions recorded at the High Level Trigger
2007-2009	Coordinator of global event reconstruction of the CMS experiment. I successfully lead the implementation of the offline reconstruction application and procedure for the first LHC collisions in 2008
2005 - 2007	Coordinator of electron and photon reconstruction in CMS. Commissioning of the ECAL High Voltage system
2004	Coordinator of BABAR event reconstruction
2003 - 2005	Measurement of CP violating parameter $\sin(2\beta+\gamma)$ with neutral B decays to $D^{(*)}0K^{(*)}0$ final states. The first measurement taking advantage of self-tagging in the neutral D and K mesons
2000 - 2002	Measurement of the CP violating parameter $\sin 2\beta$ . I was the leading analyzer and graduate student on this flagship analysis, cornerstone of the 2008 Nobel Prize. APS 2004 Tanaka award for best PhD dissertation in particle physics in USA
2000	Measurement of $B_0$ oscillation with hadronic B decays with the BaBar detector
2000-2001	Operation manager of the BABAR online data acquisition system
1999 - 2001	Commissioning of vertex reconstruction algorithms and development of exclusive B reconstruction tools used for lifetime, mixing, and CP violation measurements
1998	Detailed simulation of the BaBar drift chamber in Geant



## Invited Plenary Talks and Convenership

<i>Moriond Electroweak 2019, La Thuile, March 2019</i>	Experimental Summary
<i>ICHEP 2018, Seoul, Korea, July 2018</i>	Highlights from CMS and LHCb experiments
<i>RDMS 2018, Tashkent, Uzbekistan, Sep 2018</i>	Highlights and prospects of physics at CMS experiment
<i>SUSY 2016, Melbourne, Australia, July 2016</i>	Overview of BSM searches ATLAS and CMS detectors at LHC
<i>What Next?, Angelicum, Roma, Italia, 2014</i>	Report of the Beyond Standard Model Working Group
<i>EPS High Energy Conference 2013, Stockholm, Sweden</i>	Convener of the “Higgs & New Physics” session. Selection of submitted contributions and chairing of three days of parallel sessions
<i>ICHEP 2012, Melbourne, Australia, July 2012</i>	Convener of the “Beyond Standard Model” session. Selection of submitted contributions and chairing of three days of parallel sessions
<i>Physics in Collision, Vancouver, August 2011</i>	Status of exotic searches at LHC and Tevatron
<i>Hadron Collider Physics Symposium, La Biodola, Italy, May 2007</i>	Perspectives for New Physics Searches at 14 TeV
<i>FPCP 2002, Philadelphia, PA, May 2002</i>	Measurement of $\sin 2\beta$ from BABAR

## Parallel talks Talks at conferences and workshops

<i>LHC Experiments Committee (LHCC) 2016-2018</i>	Two presentations per year of status and progress of CMS physics program to international referees
<i>Gearing up for LHC 13, Galileo Galilei Institute, Florence, October 2015</i>	Search for long-lived particles at LHC
<i>100 Congresso Nazionale Società Italiana Fisica, Pisa, September 2014</i>	Ricerca di Nuovi Fenomeni alla Frontiera di Energia
<i>ZPW 2013: Zurich Phenomenology Workshop , 2013, Zurich</i>	Overview on searches for new physics and exotica with the CMS experiment
<i>Perimeter Institute, Waterloo, Ontario, August 2012</i>	Status and plans of exotic searches at CMS
<i>Commissione Scientifica Nazionale I, Torino, May 2010</i>	Status of CMS and First results with collisions at 7 TeV
<i>Europhysics Conference on High Energy Physics, Krakow, Poland, July 2009</i>	Generic Search for Deviations from Standard Model Predictions in CMS
<i>Incontri di Fisica di Alte Energie, Catania, Italy, March 2005</i>	Measurements of CKM angle $\gamma$ with the BABAR detector



<i>DPF 2004, Riverside, CA, August 2004</i>	Measurement of branching fractions and time dependent CP-asymmetries related to $\sin(2\beta + \gamma)$
<i>DPF 2004, Riverside, CA, August 2004</i>	BABAR Event Reconstruction
<i>Weak Interactions and Neutrinos Workshop, Lake Geneva, WI, October 2003</i>	Measurements of CKM angle $\gamma$
<i>DPF 2002, Williamsburg, VA, May 2002</i>	Time-dependent analysis of $B^0 \rightarrow J/\psi K_S^0$ decays with the BaBar detector
<i>DPF 2000, Columbus, OH, August 2000</i>	A study of the $B^0$ oscillation with fully reconstructed B mesons at BABAR

### Selected seminars and colloquia

<i>University of Belgrade, Belgrade, Serbia, December 2017</i>	Trigger needs for CMS experiment in Run2 and beyond
<i>Piacenza, CMS Italia, November 2017</i>	Physics status and outlook with CMS detector
<i>Ghent University, Belgium April 2017</i>	Status and prospects of physics with CMS detector
<i>University of Zurich, December 2016</i>	Physics prospects with CMS detector with Run2 data
<i>University of Melbourne, Australia December 2015</i>	Search for New Phenomena at the Energy Frontier
<i>100 years of General Relativity, Università di Milano Bicocca, Milan, November 2015</i>	Search for Dark Matter
<i>Università di Padova, April 2013</i>	Physics at the Large Hadron Collider
<i>DESY, Hamburg, May 2012</i>	Status of exotic searches at LHC
<i>University of Barcelona, May 2012</i>	Status of exotic searches at LHC
<i>Sapienza, Rome, September 2011</i>	Status of exotic searches at LHC
<i>CERN, Geneva, 2005</i>	Measurements of CKM angle $\gamma$ at BaBar
<i>MIT, Boston, October 2004</i>	Measurement of CP-violating asymmetry $\sin 2\beta$
<i>Iowa State University, Ames, October 2004</i>	Measurement of CP-violating asymmetry $\sin 2\beta$
<i>Caltech, Pasadena, April 2002</i>	Measurement of CP-violating asymmetry $\sin 2\beta$
<i>UC San Diego, September 2001</i>	Measurement of CP-violating asymmetry $\sin 2\beta$



## Teaching Experience

### Undergraduate

Activities and syllabus available at <http://www.roma1.infn.it/people/rahatlou/didattica.php>

2018-2019	Fisica Nucleare and Subnucleare I (III anno, Laurea Triennale Fisica) Average 80 students (6 CFU)
2018-2019	Computing Methods for Physics (I anno, Laurea Magistrale) Average 80 students (6 CFU)
2015 - 2016	Elettromagnetismo (II anno, Laurea Triennale Fisica). Average 70 students (12 CFU)
2010 - 2016	Elementary Particle Physics (II anno, Laurea Magistrale). average 10 students (6 CFU)
2009 - 2016	Laboratorio di Calcolo (I anno, Laurea Triennale). average 80 students (6 CFU + 3 CFU for Abilità Informatiche)
2008 - 2009	Fisica Generale per Biologia(I anno, Laurea Triennale). 100 students (9 CFU)
2006 - 2009	Programmazione++ (III anno, Laurea Triennale). 10 students (6 CFU)
2005 - 2009	co-instructor of course of "Laboratorio di Fisica Nucleare e Subnucleare" (I anno, Laurea Magistrale). 30 students
1999	Teaching assistant at UC San Diego for course of Electromagnetism for undergraduate majors in Physics. 100 students

### Lectures at graduate and summer schools

2019 Jan	Physics at CMS and prospects for High Luminosity LHC CMS Data Analysis School, Pisa
2019 Jan	Challenges and prospects for physics at High Luminosity LHC CMS Data Analysis School, Fermilab
2016 Aug	Search for exotic and new phenomena at Large Hadron Collider PSI Summer school on "Exothiggs", Zuoz Lyceum Alpinum, Switzerland
2014 June	Search for exotic phenomena at Large Hadron Collider Scuola di Fisica di Otranto, Italy

source: ISI Web of knowledge



## Summary of Scientific Achievements (updated 5 September 2019)

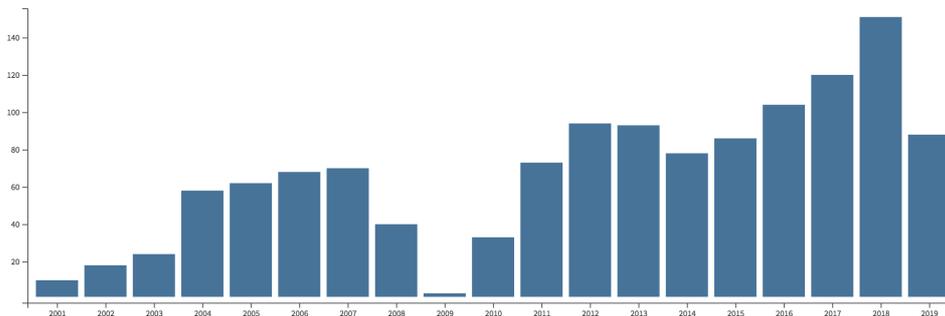
Full list of more than 1200 publications in peer-reviewed international journals available at

<http://bit.ly/rahatlou-pubs-2019>

First publication	2001
PhD in Physics	2002
Academic years	18
Total number of peer-reviewed publications	1273
Total citations	59297
average citation per publication	46.6
total citations divided by academic years	3294
H index	120
Normalized H index (divided by academic years)	6.7
total impact factor of all publications	6958
average impact factor of all publications	5.51
<b>Total number of publications in last 15 years</b>	<b>1221</b>
<b>total citations in last 15 years</b>	<b>55247</b>
<b>average citation per product in last 15 years</b>	<b>45.3</b>
<b>H index in last 15 years</b>	<b>117</b>
<b>total impact factor of publications in last 15 years</b>	<b>6644</b>
<b>average impact factor of publications in last 15 years</b>	<b>5.49</b>

Total Publications

**1,273** Analyze



Sum of Times Cited per Year

source: ISI Web of knowledge

