

Curriculum Vitae



Personal information

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Brief overview

Marco Barla graduated as a civil engineer in 1996 and has pursued the PhD in geotechnical engineering in 1999 at the Politecnico di Torino, disserting a thesis on Tunnels in swelling ground - Simulation of 3D stress paths by triaxial laboratory testing, the principal adviser being Prof. Michele Jamiolkowski. At that time he was appointed to be the Italian delegate at the YGEC99 (Young Geotechnical Engineers Conference) held in Santorini, Greece. After completing the PhD he was involved in the research activities at the Politecnico, serving as a Research Assistant first, then from 2003, he became Research Associate teaching Rock Mechanics to undergraduates of the I and II Faculty of Engineering. Today he is Confirmed Assistant Professor and teaches Numerical modelling in geotechnical engineering for Ms students of the Civil Engineering degree and Rock Mechanics for the Master in Petroleum Engineering.

From 2006 to 2012 he was the Vice Director of the DIPLAB Geomeccanica Laboratory of the Department and from 2010 to 2013 he was the commissioner for professional practice examination in Geotechnical Engineering in Torino.

He has been investigating the swelling behaviour of stiff clays with reference to tunnel excavation in the framework of tunnelling in difficult conditions, both from the experimental and theoretical point of view. This work brought to the development of a new triaxial testing procedure and a prediction method for designing tunnels in swelling ground. He has also studied the effects of clay swelling on pipe jacking. This was done in 2002, during a leave at the University of Cambridge (UK), in cooperation with the geotechnical group of Prof. Robert Mair.

The use of discontinuum numerical methods applied to geotechnical problems, such as slope stabilities and tunnel excavations, was investigated from 2006. The particle element method was used with success to predict the mechanical behaviour of partially cemented ground (e.g. Turin subsoil) both with reference to the stress strain behaviour of the Turin Metro shallow tunnels and to the applicability of trenchless technologies. In this framework, a new method was introduced to predict the jacking force, necessary to install pipelines by microtunnelling, as a function of the degree of cementation of the ground.

The latest important contribution was on the use of ground based radar interferometry for landslides monitoring. An integration procedure between GBInSAR monitoring and advanced numerical modelling has been introduced to allow for the GBInSAR to be used in emergencies and early warning systems of rock landslides. New software was developed to interpret GBInSAR data and produce alarms based on user's defined critical thresholds.

Recent research interests are on the development of geothermal energy as a renewable resource. The geothermal use of urban tunnels is being investigated: by instrumenting the segmental lining the tunnel can become an energy geo-structure and be used to exploit heat from the ground with great economic and environmental benefits. An improved tunnel precast segmental lining equipped to exchange heat with the ground in order to heat and cool adjacent buildings (ENERTUN) was developed and submitted to Italian patent.

He is responsible for research projects, contracts and consultancies at the Department and participated to a number of National Research projects (1997, 1999, 2001, 2006, 2009). He is author of a textbook, of more than a hundred of scientific papers on international and national journals, on conference proceedings, as well as editor of conference proceedings. He regularly takes part to national and international conferences, also as an invited speaker or member of the Scientific Committee. He has been chair of national and international conferences, among with the 11th International Conference of Iacmag and the MIR conferences series in Torino.

From 2001 to 2007 he served as Assistant Editor of the Rock Mechanics and Rock Engineering journal. He has been Guest Editor for ASCE Int. Journal of Geomechanics and ICE Environmental Geotechnics. From 2015 he is co-Editor of the ASCE Int. Journal of Geomechanics and member of the Editorial Board of Tunnelling & Underground Space Technology.

From 2015 he is a member of the Management Committee and Work group leader of WG3 (Sustainability e Urban planning) for the COST Action TU1405: European network for shallow geothermal energy applications in buildings and infrastructures (GABI). From 2001 he is a member of the ISSMGE Technical Committee 209 (Underground construction in soft ground) and in 2009 entered Iacmag Board. He is also a member of AGI, Associazione Geotecnica Italiana, of the ISSMGE, International Society for Soil Mechanics and Geotechnical Engineering, of IACMAG, International Association for Computer Methods and Advances in Geomechanics and of EGS-A, Enhanced Geothermal System Association.

In 2005 he was bestowed of the Iacmag Award for the successful organisation of the 11th International Conference of Iacmag, in 2007 won the Best Paper Award in the topic "The path from characterization to modelling (T2)" at the 11th ISRM Congress with the paper "Setting up a new direct shear testing apparatus", in 2011 won the 'IACMAG Excellent Contributions Award' and in 2016 the Telford Prize.

He also worked as a consultant for Geodes Srl and Desa Srl in Torino, and received assignments as an expert by the Turin Public Prosecutor's Office. Main professional projects were related to slope stability, tunnelling, sewage systems, foundations, monitoring of geotechnical structures and ground investigation. In 2013 he founded Resolving Srl, a Politecnico di Torino spin-off company which provide services in the field of tunnelling in difficult conditions and early warning monitoring of landslides which closed in 2016, at the end of the incubation period, to become Geosolving srl.

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Education and qualification

2014	Italian qualification for Associate Professor.
1999	PhD in Geotechnical Engineering at the Politecnico di Torino. Thesis: "Tunnels in swelling ground – Simulation of 3D stress paths by triaxial laboratory testing".
1996	Qualification for engineering practice.
1996	Degree in Civil Engineering at the Politecnico di Torino. Thesis: "Scavo di una galleria in terreno sciolto: modellazione e riscontri (Shallow tunnel in loose soil: modelling and performance)".

Employment

2012-present	Adjunct professor of Numerical Methods in Geotechnical Engineering.
2012-present	Member of the Academic Senate of the Politecnico di Torino.
2006-to date	Research associate (Full position) in Geotechnical Engineering. Lecturer in Rock Mechanics. Politecnico di Torino, Dept. of Structural and Geotechnical Engineering.
2003-2006	Research Associate (temporary position) in Geotechnical Engineering. Lecturer in Rock Mechanics. Politecnico di Torino, Dept. of Structural and Geotechnical Engineering.
1998-2003	Consultant at GEODES s.r.l. – Torino and DESA s.r.l. – Torino.
2000-2002	Research Assistant. Politecnico di Torino, Dept. of Structural and Geotechnical Engineering.
1996-1997	Consultant at GEODES s.r.l. – Torino.

Awards

2016	Telford Premium (Journal Prize for best paper in journal) from the Institution of Civil Engineers for the paper: Energy from geo-structures: a topic of growing interest published on Environmental Geotechnics, 2 (1), February 2015.
2014	Honorable mention at the competition of the Comune di Moena (TN) for the design of an underground car park at Longea. The project proposed together with the Architect Luciano Motta classified among the first 10 over more than 150 projects.
2011	Iacmag Excellent Contributions Award
2007	Best Paper Award in the topic "The path from characterization to modelling (T2)" at the 11 th ISRM Congress with the paper "Setting up a new direct shear testing apparatus".
2005	Iacmag Award for the organisation of the 11 th IACMAG Conference.

Professional affiliations

Member of AGI, Associazione Geotecnica Italiana.
 Member of ISSMGE, International Society for Soil Mechanics and Geotechnical Engineering.
 Member of IACMAG, International Association for Computer Methods and Advances in Geomechanics Mechanics and Geotechnical Engineering.
 Member of EGS-A, Italian Association for Enhanced Geothermal Systems
 Member of the ISSMGE Technical Committee 204 (Underground construction in soft ground) from 2004.
 Member of the Iacmag Committee on Enhancing Membership from 2006.
 Member of the Iacmag Board from 2011.

Editor

2015-to date	Co-Editor of the ASCE International Journal of Geomechanics.
2015-to date	Member of the Editorial Board of Tunnelling & Underground Space Technology.
2015	Guest Editor of the Special Issue on 'Energy geostructures: advances and perspectives' of the ICE journal Environmental Geotechnics.
2012	Guest Editor of the Special Issue on 'Advances in Modeling Rock Engineering Problems' of the ASCE International Journal of Geomechanics.
2001-2006	Assistant Editor of the international journal Rock Mechanics & Rock Engineering edited by Springer Verlag, Wien-New York.
2006-to date	Referee for the international journals: "ASCE Journal of Geotechnical and Geoenvironmental Engineering", "Rock Mechanics & Rock Engineering", "Geotechnique", "Tunnelling and Underground Space Technology", "ASCE International Journal of Geomechanics", "Journal of pipeline engineering".

Professional and scientific activities

2016-to date	Associate and Scientific consultant at Geosolving srl, engineering company in Torino (Italy).
2015-to date	Member of the Management Committee and Work group leader of WG3 (Sustainability e Urban planning) for the COST Action TU1405: European network for shallow geothermal energy applications in buildings and infrastructures (GABI). Appointed by MIUR.
2015-to date	Board member of ELGIP (European Large Geotechnical Institutes Platform - www.elgip.net) as representative of the Politecnico di Torino.
2012-to date	Member of the Academic Senate of the Politecnico di Torino.
2006-to date	Member of the Iacmag Committee on Enhancing Membership.
2004-to date	Member of the ISSMGE Technical Committee 204: Underground Construction in Soft Ground (former Technical Committee 28).

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- 2013-2016 Associate and technical coordinator of Resolving s.r.l., spin-off company of the Politecnico di Torino which provides services in the field of tunnelling in difficult conditions and early warning monitoring of landslides.
- 2010-2013 Responsible for Geotechnical Engineering Qualification Exams for engineering practice.
- 2006-2012 Vice Director and Responsible for the Rock Mechanics Sector of the DIPLAB Geomeccanica laboratory of the Dipartimento di Ingegneria Strutturale e Geotecnica.
- 2006 CTU (expert witness) for the accident occurred to the tunnels belonging to the Pietro Micca Museum in Torino on the 17/10/06.
- 2002 Visiting fellow at the University of Cambridge (U.K.), Department of Engineering, Geotechnical Group.
Cooperation with the team led by Prof. R.J. Mair on the swelling behaviour of pipe jacked tunnels in order to study the effect of different lubricating fluids by physical and numerical modelling.
- 1996-to date Member of the Organizing Committee and/or Scientific Committee for a number of National and International Conferences, e.g.:
 - World Tunnel Congress, 9-15 May 2014, Iguassu;
 - 14th IACMAG conference, 22-25 September 2014, Kyoto;
 - 13th IACMAG conference, 9-11 May 2011, Melbourne;
 - 7th IS on Geotechnical aspects of underground construction in soft ground, 17-19 May 2011, Roma;
 - EUROCK '96 (ISRM International Symposium on Prediction and performance in Rock Mechanics and Rock Engineering), 2-5 september 1996, Torino;
 - 11th IACMAG, Torino 19-24 June 2005;
 - IS TORINO '99 (Second International Symposium on Pre-failure deformation characteristics of geomaterials), 27-29 september 1999, Torino
 - MIR - Conferenze di Meccanica e Ingegneria delle Rocce series (editions 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012), Torino
- 1996-to date Regular participation also as Chairman, invited lecturer or presenter to seminars and national/international conferences with oral presentation, among which: ISRM, ECSMGE, IACMAG, ICSMGE, e.g.:
 - Chairman of the Course 'Potenzialità della modellazione numerica tridimensionale nell'ingegneria geotecnica' organised by Harpaceas Srl, Resolving Srl and Ordine degli Ingegneri Provincia di Torino, Torino, 30th June 2015.
 - Chairman of the Minisymposium 'Applications and perspectives of the Finite Discrete Element Method' at the 14th Iacmag conference, Kyoto (Japan), 22-25 September 2014.
 - Chairman of Technical Session 3B at 13th Iacmag, Melbourne (Australia), 9-11 May 2011.
 - Panelist at 3rd Canada-US Rock Mechanics Symposium, 9-15th May 2009.
 - Selected paper presentation at 12th Iacmag, Goa (India), 1-6 October 2008. "Using particle elements to model the Torino subsoil mechanical behaviour to improve the applicability of microtunnelling technique" (18').
 - Chairman of Technical Session Topic 12 & 17 at 12th Iacmag, Goa (India), 1-6 October 2008.
 - Selected paper presentation at No Dig 2007, Rome, 10-12 September 2007. "Collection and analysis of case studies of microtunnelling installations" (15').
 - Invited paper at Euro:Tun 2007, Vienna, Austria, 27-29 August 2007. "Modelling the swelling behaviour in tunnels" (15').
 - Selected paper presentation at 11th ISRM Congress, Lisbon, 9-13 Luglio 2007. "Setting up a new direct shear testing apparatus." (15'). Best Paper Award.
 - Invited lecture at No Dig 2004, Hamburg, Germany, 15-17 November 2004. Session 6 (Case studies): "Analysis of Jacking Forces During Microtunnelling in Limestone" (30').
 - Issue Paper presentation at 11th IC of Iacmag 2005, Torino, 19-24 June 2005. Session 9 (Surface and near surface geotechnical structures: foundations, pipes and tunnels): "Assessing design parameters for tunnelling in a cemented granular soil by continuum and discontinuum modelling" (30').
 - Italian delegate at the Young Geotechnical Engineers Conference (YGEC '99), Santorini (Greece), 23-25 September 1999.
 - Lectures and/or seminars at: Université Joseph Fourier, Grenoble (France) (January 2006 and 2007); ETH, Zurich (Switzerland) 23rd April 2013.
 - Lectures for professional practice: Ordine dei Geologi della Sardegna, Ordine Ingegneri Provincia di Chieti, Ordine Ingegneri Provincia di Torino.

Most significant professional projects

Slope stability, open pit mines:

- 2015 San Pietro Val Lemina (To). Expert consultancy (CTP) for the ATP related to a slope instability caused by construction works.
- 2012 Buzzi Unicem. Assessment of the stability conditions of the Tetti di Tabanot quarry face and identification of the possible remedial measures to be adopted for risk mitigation.
- 2011 Municipality of Cimenasco. Consultancy for Court appointed expertise (CTU) on a slope stability problem.
- 2010 Municipality of Valenza Po (Al). Slope stability analysis for the Vecchia Fornace landslide.
- 2010 Asja Ambiente SpA (Torino), geological and geotechnical studies to support the design of stabilizing measures for the slope above the power plant of the windmill station of Alia (Pa).
- 2009 Regione Autonoma Valle d'Aosta. Stability analysis and reinforcement measures for the Valgrisenche SR25 (km 6) rock landslide.

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- 2009 Incisa Scapaccino (At). Stabilization measures for the landslide.
 2007 Municipality of Valenza Po (Al). Design of the stabilisation measures for the Rio Grana river bank. Stability analyses and design of retaining structures based on naturalistic engineering principles.
 2004 Municipality of Valenza Po (Al). Preliminary design of the stabilisation measures for the provincial road Strada Citerna. Slope stability analyses and design of retaining structures.
 2002 Municipality of Valenza Po (Al). Design of the stabilisation measures for the slope Bastioni di V. Rimini – zona Belvedere. Slope stability analyses and design of retaining structures.
 1998 Alpetto open pit mine, Municipality of Cesana Brianza (Lc). Study of the final stabilisation of the slopes after the slide of 28–29 June 1997 and of the new exploitation areas A1 e A2. Analyses of the stability conditions. Collapse mechanism and design of the retaining wall by DEM modelling.
 1997 Brenva glacier (Monte Bianco). DEM numerical analyses to simulate the 18th January 1997 rock fall.

Foundations, retaining structures, structures:

- 2014 Historic secondary school in Carmagnola (To). Structural real-time monitoring.
 2012 Underground car park in Viale Vittorio Emanuele II n°68, Bergamo. Geotechnical consultant.
 2001 Società Bonifiche Valle d'Aosta (Ao). Advice on the swelling behaviour of filling material (blast-furnace slug) for reinforced soil to be used on the ex-Cogne steel plant site.
 1997 FF.SS Porta Susa (Torino) new train station. Design of shallow foundations.

Tunnelling and undergrounds cavities:

- 2012 Hydroelectric Tunnel Project, Kishanganga (India). Identification of the critical areas for TBM advancement and definition of guidelines to be adopted during construction.
 2012 Arch. Motta, geological and engineering consultancy for an underground car park in Bergamo.
 2008 Aeroporto internazionale di Torino Caselle. Rain collectors for the landing strip. Geotechnical characterisation of the subsoil conditions and design of a microtunnel installation for the upgrade of the sewer system at the "Sandro Pertini" International Airport.
 2007 Sewer systems, San Mauro, Torino. Consultancy for Court appointed expertise (CTU) for an accident occurred during construction of a sewage pipeline by trench excavation.
 2006 Pietro Micca Tunnels, Torino. CTU with reference to an accident occurred in the historical tunnels of the Pietro Micca Museum due to works in the adjacent Porta Susa new train station construction site.
 2002 New High Speed Railway Line Torino - Lyon, Italferr. Advice with reference to the preliminary design of the S. Didero - Settimo Torinese line (National Segment).
 2000 Autosilo Trevipark, Padova (Pv). Consultancy for Court appointed expertise (CTU) for an hydraulic failure during construction of an underground car park. Geotechnical characterisation, management of geotechnical site investigations and development of FE flow analyses.
 2001 New High Speed Railway Line Torino - Lione, R.F.I. (Rete Ferroviaria Italiana). Advice with reference to the technical evaluation of the planned alignment S. Didero - Settimo Torinese.
 1999-2001 Pont Ventoux Hydro electric scheme, Susa (To), AEM Torino. Advice with reference to the geotechnical aspects of the diversion tunnels and the underground power plant cavern during final design, construction and inspection.
 2001 Linea 1, Metropolitana Automatica di Torino. Geological and geotechnical profile.
 2000 New High Speed Railway Line Torino - Lione, Alpetunnel-GEIE. Geotechnical characterisation of the Carboniferous Formation of the Ambin with reference to the feasibility study of the railway base tunnel.
 1997 Morgex (Ao) highway tunnel. FDM numerical analyses.

Monitoring:

- 2015 Regione Autonoma Valle d'Aosta. Ground based interferometric radar monitoring of the Citrin (Ao) landslide.
 2015 Città Metropolitana di Torino. Liceo Marie Curie, Grugliasco (To). Real time structural monitoring by potentiometer and inclinometer.
 2014 Città Metropolitana di Torino. Liceo Darwin, Rivoli (To). Real time geotechnical monitoring by tape extensometer of the rock block retaining wall.
 2014 Città Metropolitana di Torino. Liceo Baldessano-Roccati, Carmagnola (To). Real time structural monitoring by potentiometer and inclinometer.
 2013 Città Metropolitana di Torino. Liceo Majorana, Torino. Real time structural monitoring by potentiometers.
 2011 Buzzi Unicem SpA, Casale Monferrato (Al). Ground based interferometric radar monitoring of the Tetti Tabanot, Roaschia (CN) open pit mine.
 2010 GTT S.p.A. (Gruppo Torinese Trasporti). Real time geotechnical monitoring in the line 1 metro tunnel during construction of the Torino railway link tunnels.

Selected research projects and contracts (responsible of):

- Research project "Determinazione delle condizioni ottimali di condizionamento del terreno durante lo scavo meccanizzato con EPB per la realizzazione del Nodo di Palermo" funded by SIS S.c.p.a. (Italy). 2016 (2 months), 28,000 €.

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- Responsible of the research project "Studio dell'applicabilità di un nuovo sistema radar per il monitoraggio dei processi di rottura fragile delle rocce" funded by IDS (Italy). 2015 (3 months), 5,000€.
- Research contract "Monitoraggio dei pannelli di tamponamento prefabbricati presso l'Istituto di Istruzione Superiore Marie Curie di Corso Allamano 120 a Torino". Città Metropolitana di Torino, Italy. 2015 (6 months). Funding: 23,900 €.
- GABI: European network for shallow geothermal energy applications in buildings and infrastructures (COST Action) Specifications: Research action gathering together 55 participants from 37 institutions between Universities and Companies located in Austria, Belgium, Switzerland (LMS-EPFL), Czech Republic, Germany, Spain, France, Italy, Poland, Portugal, Slovenia and United Kingdom.
- ENERTUN: Le gallerie metropolitane come fonte di energia geotermica/Metro tunnels as geothermal energy sources. Feasibility study funded by the Regione Piemonte (Polo di Innovazione Regionale Enernhy) with the collaboration of Desa Srl, Torino. 2014-2015 (12 months). Funding : 57.000 €
- ENERWALL: Le paratie come fonte di energia geotermica/Diaphragm walls as geothermal energy sources. Feasibility study funded by the Regione Piemonte (Polo di Innovazione Regionale Enernhy) with the collaboration of Teknema Progetti Srl, Torino and Resoving Srl, Torino. 2015 (6 months). Funding: 69.000 €.
- National research project PRIN 2009 "Monitoraggio mediante interferometria radar da terra e modellazione di grandi frane in roccia". 2011-2013 (24 months). Funding: 76,000 €.
- Research contract "Hydro-mechanical behaviour of Opalinus clay specimens extracted from Mont Terri Research Laboratories in St. Ursanne, Switzerland". ETH, Switzerland. 2013-2015 (24 months). Funding: 73,000 €.
- Research contract "Determinazione del comportamento meccanico e dipendente dal tempo dei campioni di siltite provenienti dalla centrale idroelettrica di Rogun (Tagikistan)". Electroconsult, Italy. 2013 (12 months). Funding: 38,000 €.
- Research contract "Swelling pressure study on rock samples from Portillo tunnel". Hidroelectrica La Confluencia, Chile. 2014-2016 (24 months). Funding: 36,000 €.
- Contract "Monitoraggio del fabbricato di collegamento del complesso scolastico Liceo Majorana di via Frattini 11-15 a Torino". Provincia di Torino. 2013-2015 (36 months). Amount: 29,000 €.
- Research contract "Determinazione delle condizioni ottimali di condizionamento del terreno durante scavo con EPB". Global Chimica (3 months). Funding: 25,000 €.
- Research contract "Specialised swelling tests on rocks from La Higuera Adit 3 tunnel". Golder Associates 2013 (12 months). Funding: 10,000 €.
- Research contract "Specialised swelling tests on rocks from Portillo tunnel". Golder Associates. 2013 (12 months). Funding: 10,000 €.
- Contract "Determinazione dei parametri geotecnici dei campioni di roccia prelevati presso la Galleria di finestra – Galleria di Saint-Oyen (Valle d'Aosta)". Lauro S.p.A.. 2013 (3 months). Amount: 4,800 €.
- Research contract "Specialised laboratory testing on swelling rocks of the La Higuera project". Golder Associates. 2012 (12 months). Funding: 12,000 €.
- Contract "Determinazione della resistenza a compressione monoassiale di provini di granito dell'Isola della Maddalena". Università degli Studi di Firenze. 2012 (1 month). Amount: 1,526 €.
- Contract "Determinazione della resistenza al taglio di giunti naturali e artificiali di granito proveniente dal sito della Diga di Cumbidanovu". Consorzio Bonifiche Sardegna. 2011 (2 months). Funding: 9,000 €.
- Contract "caratterizzazione geotecnica dei campioni di terreno provenienti da sondaggi geotecnici eseguiti nel mese di Agosto 2009, presso il sito della centrale eolica "Serra Cavoro", nel co- mune di Alia (Pa)". Provincia di Torino. 2013-2009 (3 months). Amount: 7,474 €.
- Contract "Caratterizzazione geomeccanica dei campioni di terreno provenienti da sondaggi geotecnici eseguiti presso il sito di Versailles". VIPP Lavori S.p.A.. 2009 (3 months). Amount: 4,555 €.
- Contract "Gerrards Cross – Tunnel collapse study" signed by Geo-Design Consulting Engineers Ltd and Politecnico di Torino. 15 March 2007 – 15 August 2007 (5 months). Total funding: 50,000 €.
- Research projects "Studio dell'applicabilità del microtunnelling nel sottosuolo torinese (Applicability of microtunnelling to the Torino subsoil)" and "Il contributo della meccanica delle rocce per il rilancio della geotermia come fonte di energia rinnovabile (The contribution of rock mechanics for enhancing geothermal energy production)". Funding from the Department 2007: 3,000 €.
- Research project "L'applicabilità del microtunnelling a Torino (Applicability of microtunnelling to the Torino subsoil)". Funding from the Department 2006: 3,500 €.

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- Research project "Trenchless technology for sustainable cities: reduction of jacking forces in clays", in cooperation between Politecnico di Torino and the University of Cambridge (Dr. K. Soga), funded by the British-Italian partnership programme for young researchers. 1 January 2004 - 31 December 2004 (12 months). Total funding: 12,400 €.

Selected research projects and contracts (participant of):

- Contract "Analisi e verifica delle condizioni di esercizio in sicurezza del Palazzo Uffici Provinciali di Corso Inghilterra 7, tenuto conto del costruendo Centro Direzionale di Intesa Sanpaolo e in particolare dell'annesso impianto geotermico". 2011 (12 months). Provincia di Torino. Funding: 350.000 €.
- Research contract "Monimod: monitoring and modelling the Deep-Seated Gravity Slope Deformation Movement of the Beauregard dam" for the Italian Protection Agency. (12 months). Funding: 200,000 €.
- Research contract "Condizioni geologico-stratigrafiche e geotecniche dei terreni e monitoraggio in corso d'opera degli scavi della metropolitana automatica di Torino - linea 1" for GTT S.p.A. (Gruppo Torinese Trasporti). 6 March 2003 - 5 March 2004 (12 months). Funding: 55,000 €.
- Research contract "Tunnel maintenance" for the International Union of Railways (UIC). 15 April, 2003-14 October, 2003 (6 months). Funding: 55,000 €.
- Research project "Scavo meccanizzato di gallerie (Mechanised tunnelling)" funded by MIUR, COFIN 2001. 25 November 2001 - 24 November 2003 (24 months). Funding: 258,000 €.
- Consultancy "Prestazioni di consulenza in merito alla progettazione preliminare/studio di prefattibilità della tratta S. Didero - Settimo Torinese (Tratta nazionale) del nuovo collegamento ferroviario Torino-Lione" for Italferr S.p.A.. 15 April 2002 - 15 June 2002 (2 months). Funding: 320,000 €.
- Consultancy "Analisi e valutazioni del progetto di una nuova linea ferroviaria (Gronda merci e tratta di accesso al tunnel di base) che, proseguendo dalla linea AC Torino-Milano (presso Settimo Torinese) consenta, in una prima fase, il collegamento con il previsto nuovo PM (posto di movimento) di Bruzolo - S. Didero, situato al termine della tratta internazionale del nuovo collegamento ferroviario Torino - Lione" for RFI S.p.A. (Rete Ferroviaria Italiana). 15 September 2001 - 15 November 2001 (2 months). Funding: 400,000,000 LIT.
- Research Project "Gallerie in condizioni difficili (Tunnelling in difficult conditions)" funded by MURST, COFIN 1999. 1999-2001.

Teaching experience

2015-16	Regular teacher of: Numerical methods in geotechnical engineering, Civil Engineering, 8 credits in English. Lectures on Rock Mechanics for the Master in Petroleum Engineering in English. Supervisor of 17 Ms Thesis.
2014-15	Regular teacher of: Numerical methods in geotechnical engineering, Civil Engineering, 8 credits in English. Lectures on Rock Mechanics for the Master in Petroleum Engineering in English. Supervisor of 10 Ms Thesis.
2013-14	Regular teacher of: Numerical methods in geotechnical engineering, Civil Engineering, 8 credits in English. Lectures on Rock Mechanics for the Master in Petroleum Engineering in English. Supervisor of 8 Ms Thesis and 1 PhD Thesis.
2012-13	Regular teacher of: Numerical methods in geotechnical engineering, Civil Engineering, 8 credits in English. Tutor for the e-learning course (Teledidattica) Geotecnica (20 hours). Lectures on Rock Mechanics for the Master in Petroleum Engineering. Supervisor of 4 Ms Thesis and 1 PhD Thesis.
2011-12	Tutor for the e-learning course (Teledidattica) Geotecnica (20 hours). Assistant: Rock Mechanics I and Numerical methods in geotechnical engineering, I Facoltà di Ingegneria, 5 credits (over a total of 10) in English. Lectures on Rock Mechanics for the Master in Petroleum Engineering. Supervisor of 1 Ms Thesis and 2 PhD Thesis.
2010-11	Tutor for the e-learning course (Teledidattica) Geotecnica (20 hours). Assistant: Rock Mechanics II, I Facoltà di Ingegneria, 5 credits (over a total of 10) in English. Lectures on Rock Mechanics for the Master in Petroleum Engineering. Supervisor of 6 Ms Thesis and 2 PhD Thesis.
2009-10	Regular teacher of: Meccanica delle Rocce I, II Facoltà di Ingegneria, 5 credits. Assistant: Rock Mechanics II, I Facoltà di Ingegneria, 5 credits (over a total of 10) in English. Tutor for the e-learning course (Teledidattica) Geotecnica (20 hours). Supervisor of 2 Ms Thesis and 2 PhD Thesis.
2008-09	Regular teacher of: Meccanica delle Rocce I, II Facoltà di Ingegneria, 5 credits.

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	Tutor for the e-learning course (Teledidattica) Geotecnica (20 hours). Supervisor of 3 Ms Thesis and 2 PhD Thesis.
2007-08	Regular teacher of: Meccanica delle Rocce I, II Facoltà di Ingegneria, 5 credits (student's evaluation = 3.8/4). Assistant: Rock Mechanics II, I Facoltà di Ingegneria, 5 credits (over a total of 10) in English. Lectures for the Master in Petroleum Engineering (7 hours). Tutor for the e-learning course (Teledidattica) Geotecnica (20 hours). Supervisor of 4 Ms Thesis and 2 PhD Thesis.
2006-07	Regular teacher of: Meccanica delle Rocce I, II Facoltà di Ingegneria, 5 credits (student's evaluation = 3.9/4). Assistant: Rock Mechanics II, I Facoltà di Ingegneria, 5 credits (over a total of 10) in English. Lectures for the Master in Petroleum Engineering (6 hours). Supervisor of 4 Ms Thesis and 2 PhD Thesis.
2005-06	Regular teacher of: Meccanica delle Rocce I, II Facoltà di Ingegneria, 5 credits (student's evaluation = 3.9/4). Regular teacher of: Meccanica delle Rocce II, II Facoltà di Ingegneria, 5 credits (student's evaluation = 3.9/4). Lectures for the Master in Petroleum Engineering (6 hours). Supervisor of 9 Ms Thesis.
2004-05	Regular teacher of: Meccanica delle Rocce II, II Facoltà di Ingegneria, 5 credits (student's evaluation = 3.8/4). Regular teacher of: Meccanica delle Rocce I, I Facoltà di Ingegneria (Sede di Alessandria). Assistant: Meccanica delle Rocce, I Facoltà di Ingegneria. Lectures for the Master in Petroleum Engineering (6 hours). Supervisor of 12 Ms Thesis.
2003-04	Regular teacher of: Meccanica delle Rocce B, I Facoltà di Ingegneria, 5 credits. Assistant: Meccanica delle Rocce and Laboratorio di sintesi finale per allievi geotecnici, I Facoltà di Ingegneria. Lectures for the Master in Petroleum Engineering (2 hours). Supervisor of 8 Ms Thesis.
2002-03	Assistant: Meccanica delle Rocce A, Meccanica delle Rocce B and Laboratorio di sintesi finale per allievi geotecnici, I Facoltà di Ingegneria. Supervisor of 7 Ms Thesis.
2001-02	Assistant: Meccanica delle Rocce and Meccanica delle Rocce 2, I Facoltà di Ingegneria. Supervisor of 2 Ms Thesis.
2000-01	Assistant: Meccanica delle Rocce and Meccanica delle Rocce 2, I Facoltà di Ingegneria. Supervisor of 4 Ms Thesis.
1999-00	Collaborator: Meccanica delle Rocce 2, I Facoltà di Ingegneria. Supervisor of 2 Ms Thesis.
1998-99	Collaborator: Meccanica delle Rocce 2, I Facoltà di Ingegneria. Supervisor of 2 Ms Thesis.

Publication List

Patent

- 2016 An improved tunnel precast segmental lining equipped to exchange heat with the ground in order to heat and cool adjacent buildings (ENERTUN) was developed and submitted to Italian patent (Priority Number: 102016000020821).

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- 2000 BARLA M., Stress paths around a circular tunnel – Percorsi di sollecitazione attorno ad una galleria circolare, RIVISTA ITALIANA DI GEOTECNICA, pp. 53-58, 2000, Vol. XXXIV/1, ISSN: 0557-1405

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- 2002 G. BARLA; BARLA M., Capitolo 1 - Le opere in sottoterraneo e il rapporto con l'ambiente, In: Le opere in sottoterraneo e il rapporto con l'ambiente, G. BARLA; M. BARLA, Patron (ITA), pp. 9-43, 2002, ISBN: 88-555-2680-4

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- 2000 G. BARLA; M. BARBERO; BARLA M., La caratterizzazione geotecnica nello scavo di gallerie, In: Lo scavo meccanizzato delle gallerie, G. BARLA, Patron (ITA), pp. 23-64, 2000, ISBN: 88-555-2574-3

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