



## ALERT - Geomaterials Member Data

<b>Team:</b>	<p>Name of the institution <i>Laboratoire 3S – UMR 5521 CNRS (Université J. Fourier and Institut National Polytechnique de Grenoble)</i></p> <p>Name of the team <i>Laboratoire Sols, Solides, Structures</i></p>
<b>Responsible ALERT member:</b>	<p>Name <i>Gioacchino (Cino) Viggiani</i></p> <p>e-mail <i>cino.viggiani@hmg.inpg.fr</i></p>
<b>Link to the website:</b>	<p>Link: <a href="http://www.3s.hmg.inpg.fr/">http://www.3s.hmg.inpg.fr/</a></p>
<b>Size of the research group:</b>	<p><i>25 Seniors, 9 Post-docs, 34 Doctoral Students, 8 Technical Assistants, 4 Administrative Assistants</i></p>

<b>Researchers</b>	<b>Topic(s) of interest</b>
<i>Cino VIGGIANI</i>	<p><i>Strain Localization, Shear Banding, Fracture propagation</i></p> <p><i>Constitutive Modeling (Soil and Rock)</i></p> <p><i>Advanced Experimental Methods (Digital Image Analysis, X-ray Tomography, Ultrasonic Tomography)</i></p> <p><i>Micro Mechanics of Granular Materials</i></p>
<i>Jacky MAZARS</i>	<p><i>Damage mechanics and Geomaterials</i></p> <p><i>Concrete structures under severe loading</i></p> <p><i>Seismic behaviour including soil structure interaction</i></p>
<i>Denis CAILLERIE</i>	<p><i>Second grade models ( theoretical and numerical analysis)</i></p> <p><i>Bifurcation and controllability (existence and uniqueness theorems, second order work, monotonicity)</i></p> <p><i>Granular Media (continuous modeling, Hill's lemma, equivalent stresses)</i></p> <p><i>Porous media (modeling by homogenization)</i></p>
<i>Felix DARVE</i>	<p><i>Incrementally Non-Linear Constitutive Relations</i></p> <p><i>Bifurcations and Instabilities in Natural Media</i></p> <p><i>Multi-Scale Approaches for Granular Materials</i></p>
<i>Bruno CHAREYRE</i>	<p><i>Micromechanics of Granular Materials - DEM Modelling</i></p> <p><i>Multi-Scale Approaches and Homogenization</i></p> <p><i>DEM in Geotechnical Engineering</i></p>



<p><i>Marc BOULON</i></p>	<p><i>Hydromechanics of the contact between geomaterials under static and cyclic loading (hydraulic conductivity, rock joints, argilite -concrete contact, argilite bentonite contac)</i></p> <p><i>Inverse analysis in Geomechanics (FEM, optimisation, gradient methods, genetic algorithms)</i></p>
<p><i>Panagiotis KOTRONIS</i></p>	<p><i>Rupture and straining in geomaterials (second gradient models, post-localisation, objectivity)</i></p> <p><i>Dynamic analysis of structures (earthquake, simplified methods, multifiber beams)</i></p>
<p><i>Jacques DESRUES</i></p>	<p><i>Deformation processes in geomaterials (Deformation, Rupture, Strain Localization)</i></p> <p><i>Full field measurement methods (strain field, Photogrammetry, Digital Image Analysis, X-Ray Computed Tomography)</i></p> <p><i>Constitutive modeling in geomaterials (constitutive equations, bifurcation, numerical integration of CE)</i></p>
<p><i>Yannick SIEFFERT</i></p>	<p><i>Second gradient models</i></p> <p><i>Strain localization</i></p> <p><i>Thermo-hydro-mechanical behavior</i></p>
<p><i>René CHAMBON</i></p>	<p><i>Constitutive equations for soils rocks and concrete (elastoplasticity, damage mechanics, hypoplasticity)</i></p> <p><i>Boundary Value Problems ( existence and uniqueness of solutions, bifurcation)</i></p> <p><i>Models with microstructure, Second Gradient models and relatives (boundary conditions included)</i></p> <p><i>Finite Element Method</i></p> <p><i>Coupled Problems (THM)</i></p>
<p><i>Pierre BESUELLE</i></p>	<p><i>Experimental characterization of homogeneous and localized deformation in rock ( brittle-ductile transition, development of strain measurement devices in high pressure cells)</i></p> <p><i>Modelling the mechanical behaviour of rocks (non linear incremental models, Bifurcation analysis)</i></p> <p><i>Theoretical study of strain localization,, analysis of the brittle-ductile transition in compacting porous materials</i></p> <p><i>Finite elements for local second gradient model in large strain formulation</i></p> <p><i>X-Ray Computed Tomography and Ultrasonic Tomography</i></p>
<p><i>Jolanta LEWANDOWSKA</i></p>	<p><i>Poromechanics applied to geomaterials (micro-macro modeling, multiphysical couplings, homogenization, microstructure, double porosity)</i></p>
<p><i>Cristian DASCALU</i></p>	<p><i>Multi-scale modelling of failure in geomaterials (cracks, homogenization, instabilities)</i></p> <p><i>Thermal and hydro-mechanical influences on fracture (thermal dissipation, cohesive-zone models, fluid-driven cracks)</i></p> <p><i>Friction instabilities and seismic initiation (friction laws, dynamic instabilities, earthquakes)</i></p>



<i>Olivier PLE</i>	<i>Reinforced materials, fracture propagation (soil and geotextiles), Experimental methods (in situ and laboratory) Constitutive laws</i>
<i>Laurent DAUDEVILLE</i>	<i>Experimental investigation of concrete behavior under severe loading (GIGA, fast transient dynamics, concrete) Discrete element modelling of concrete (DEM, dynamics of impacts, concrete)</i>
<i>Yann MALECOT</i>	<i>Experimental investigation of concrete behavior under severe loading (GIGA, fast transient dynamics, concrete) Inverse analysis of in situ geotechnical measurements (inverse analysis, direct search solution, genetic algorithms)</i>
<i>Philippe MARIN</i>	<i>Modelling of concrete structures submitted to impacts (discrete element method, dynamics of impacts, concrete) coupled finite/discrete element method for impacted structures (FEM, DEM, impacts)</i>
<i>Frédéric DONZE</i>	<i>Discrete element modelling of civil engineering structures submitted to impacts (DEM, dynamics of impacts, protective structures) Instability in geomaterials (DEM, granular materials)</i>
<i>Gael COMBE</i>	<i>Granular materials (discrete simulations, numerical methods)</i>
<i>Pierre FORAY</i>	<i>Physical modelling of geotechnical structures (Offshore piling, Pipes, Anchors, Water turbines, Cyclic loading) Fluid-soil-structure interaction under wave action (Pipes, Field instrumentation on coastal structures) Seismic liquefaction of soils: Prediction from in-situ tests (piezocone, seismic cone) , non linear dynamic soil properties In-situ tests: Soil properties from field tests, correlations between geophysical and geotechnical data</i>
<i>Philippe GOTTELAND</i>	<i>Geo-composite materials, soil with inclusions, geosynthetics Experimental methods (in situ and in laboratory) Numerical modelling (DEM and Continuum methods)</i>
<i>Frédéric PELLET</i>	<i>Fundamental Rock Mechanics (Nuclear wastes storage, Tunnelling, Earthquake engineering)</i>
<i>Safwan LABANIEH</i>	<i>Liquefaction and cyclic behaviour (Triaxial testing, Non-linear behaviour, Cyclic creep)</i>
<i>Etienne FLAVIGNY</i>	<i>Soils mechanics Laboratory testing</i>
<i>Benjamin LORET</i>	<i>Mechanics of Saturated and Unsaturated Porous Media Chemio-mechanical coupling Dynamics of Fractures</i>



<b>Post-docs</b>	<b>Topic(s) of interest<sup>1</sup></b>
<i>Huynh KHOA</i>	<i>Landslide modelling as a bifurcation problem</i>
<i>Stephen A. HALL</i>	<i>Geophysics applied to Geomechanics (Ultrasonic Tomography, Acoustic Emissions, Digital Image Analysis, Seismic Imaging) Multi-scale damage in rocks</i>
<i>Frédéric COLLIN</i> <i>(currently at the University of Liège, Belgium)</i>	<i>Boundary value problems (existence and uniqueness of solutions, bifurcation) Models with microstructure, second gradient models and relatives Finite element method Coupled problems (THM)</i>
<i>Olivier BUZZI</i> <i>(currently at the University of Newcastle, Australia)</i>	<i>Hydromechanics of the argilite bentonite contact (hydraulic conductivity, argilite bentonite contact, unsaturated materials)</i>
<i>Frédéric VALLIER</i> <i>(currently at Kyushu University, Japan)</i>	<i>Scale effect in the mechanical behaviour of rock joints (FEM, rock joints, rock joints interface behaviour, scale effect)</i>
<i>Cécile COLL</i> <i>(currently at the University of Liège, Belgium)</i>	<i>Behavior of clay-rock at high stresses (experiments, strain localization, permeability measurements) Finite Elements for coupled phenomena in Geomechanics</i>
<i>Nicolas LENOIR</i> <i>(currently at Kumamoto University, Japan)</i>	<i>Shear Bands and Fractures in Rock Advanced Experimental Methods ( Image Analysis, X-ray Tomography, Ultrasonic Tomography)</i>
<i>Mark EMERSON</i>	<i>Correlations between geotechnical and geophysical data Water turbines</i>
<i>David BERTRAND</i>	<i>DEM modelling of granular materials and geo-composites Dynamics of soil geo-composites:(localized impact (blocks) and surface effects (snow avalanches)</i>

<sup>1</sup> Each topic should be actively linked to the list of the relative pdf papers.



<b>Present PhD students</b>	<b>Title of the thesis</b>
<i>Luc SHOLTES</i>	<i>Micromechanical Modelling of Unsaturated Granular Materials</i>
<i>Luc SIBILLE</i>	<i>Bifurcations and instabilities in discrete media</i>
<i>Florent PRUNIER</i>	<i>Finite element modelling of landslides</i>
<i>Frank BOURRIER</i>	<i>Rock/ground interactions modelling</i>
<i>Kamel HAMADI</i>	<i>Bifurcations and instabilities in geotechnical engineering</i>
<i>Hamed AL GALI</i>	<i>Bifurcations and instabilities in soils</i>



<i>Xuân Huy NGUYEN</i>	<i>Réduction du risque sismique, Analyse de la vulnérabilité de structures à murs porteurs en béton</i>
<i>Stéphane GRANGE</i>	<i>Risque sismique: stratégie de modélisation pour simuler la réponse des structures en béton et leurs interactions avec le sol</i>
<i>Romeo FERNANDES</i>	<i>Objective numerical modeling of coupled hydromechanical problems for damageable media</i>
<i>Iraj RAHMANI</i>	<i>Hydromechanics of rock joints and of argillite concrete contacts</i>
<i>Séverine LEVASSEUR</i>	<i>Inverse analysis of in situ geotechnical measurements using a genetic algorithm'</i>
<i>Luisa EQUIHUA ANGUIANO</i>	<i>Numerical modelling of offshore anchors and suction caissons, cyclic loading</i>
<i>Salah MESSAST</i>	<i>Numerical modelling of piles under cyclic loading</i>
<i>Tien Dung TRAN NGOC</i>	<i>Pollutant transport in double porosity unstaured soils: modeling by homogenization and applications.</i>
<i>Gabriela BILBIE</i>	<i>Multi-scale modelling of fracture and damage in quasi-brittle materials</i>
<i>Sophie CAMP</i>	<i>Mechanical behaviour of a clay layer: Experimental investigation and numerical modelling</i>
<i>Thomas GABET</i>	<i>Influence of the loading path on the triaxial behaviour of concrete</i>
<i>Xuan Hong VU</i>	<i>Influence of composition of concrete on its triaxial behaviour</i>
<i>Emmanuel FRANGIN</i>	<i>Coupled finite/discrete element method for the modelling of a concrete structure submitted to an impact</i>
<i>Wen Jie SHIU</i>	<i>Discrete element modelling of penetration and perforation in concrete targets</i>
<i>Fabrice DUPRAY</i>	<i>Constitutive modelling of concrete under severe triaxial loading</i>
<i>Julien LORENTZ</i>	<i>Experimental and numerical studies of rockfall protective structures</i>
<i>Jean-Patrick PLASSIARD</i>	<i>Development and application of the Discrete Element Method for studying protective structures submitted to an impact load</i>
<i>Bastien CHEVALIER</i>	<i>Mechanical behaviour of heterogeneous granular materials - a numerical study by the discrete element method</i>
<i>David BONJEAN</i>	<i>Liquefaction around marine structures under wave action</i>
<i>Ngoc Than NGUYEN</i>	<i>Numerical modelling of Pile groups and Raft-pile foundations in soft soils</i>
<i>Marcos OROZCO</i>	<i>Soil-Structure interaction in offshore deep sediments, Cyclic loading</i>
<i>Jane JERRAM</i>	<i>Seismic liquefaction, in-situ tests, soil non linearities, modelling of seismic soil response</i>
<i>Xiangwei ZHANG</i>	<i>Physical and numerical modelling of seismic soil-structure interaction.</i>



<i>Lionel FAVIER</i>	<i>Modeling gravitational risk by DEM</i>
<i>Mohammed KESHAVARZ</i>	<i>Modelling changes in physical properties of rocks occurring before earthquake triggering</i>
<i>Stéphane LAMBERT</i>	<i>Mechanical behaviour of geo-composite cells, application to rockfall barrier, experimental works</i>
<i>Christophe SALOT</i>	<i>DEM modelling of heterogeneous geo-composite material, application to soil-tire chips mixtures</i>
<i>Vincent GRAZ</i>	<i>Cellular technic for geostructure, from constitutive materials to real structure behaviour</i>