

RESEARCHER PROFILE: Early Stage Researcher (PhD Position)

APPLICATION DEADLINE: 15th August, 2019

PROJECT TITLE:

Micromechanics of dry granular systems (ESR8)



We are looking for an **Early Stage Researcher (PhD student)** starting between **September 2019 and December 2019**.

For this position your host organisation will be the [Laboratoire 3SR](#) at [Université Grenoble Alpes](#) in **France**. You will be given the opportunity to work with TU Graz (Austria) with a private sector secondment in a network of international partners in the context of the EC-funded **Horizon 2020 “Marie Curie” MSCA Innovative Training Network (ITN) “CALIPER”** (caliper-itn.eu). Caliper aims to gain a deeper understanding of the mechanics of granular materials and suspensions by merging DEM approaches with the latest developments in the field of three dimensional imaging.

This exciting project combines advanced mechanical experiments on granular materials, (which will be carried out with periodic x-ray tomography scanning), 3D image analysis and numerical simulation. The main subjects are to understand the effect of grain shape and grain roughness on the mechanical response of granular materials.

Some of our previous work in the field can be found in the following articles:

- <https://hal.archives-ouvertes.fr/hal-01571111/document>
- <https://hal.archives-ouvertes.fr/hal-01571135/document>
- <https://authors.library.caltech.edu/83215/1/1-s2.0-S0022509617306580-main.pdf>

During your PhD work you will work with and contribute to the python free-software software packaged called the [“Software for Practical Analysis of Materials”](#).

Skills we are looking for

We are looking for outstanding candidates with the ability to excel in research. The candidates must be eager to learn and gain new experience, as well as getting into advanced experiment and numerical analysis. **Specific skills** needed for the position are:

- *Mechanics background:* you are holding a **master’s degree in mechanics/engineering** or similar. You should have a basic understanding of granular mechanics.
- *Modeling / experimental mechanics interest:* You should bring a strong desire to dive into either **mechanical modelling at the particle scale, or experimental micro-mechanics and ideally both**.
- *Software and programming background:* you have at least **basic programming skills**, and you should be open to use a **Linux-based operating systems**, as well as computing clusters. Advanced skills in **Python/C/C++** is a strong plus. Knowledge of DEM techniques, or 3D image analysis techniques is a strong plus as well.

- *Personality and ability to communicate*: you should have an open-minded and critical thinking attitude. You should be able to thrive in a team environment and have the capability to **learn rapidly and sustainably**, and you should be able to **communicate effectively** using English as a language.

We offer

- *A Research Project with High Value*: you will explore mechanics of granular materials at the cutting edge of research by combining advanced experimental techniques and advanced Discrete Element Modelling in a ratio that will depend on the candidate.
- *Team and Location*: you will join a strong mechanics group in Laboratoire 3SR in Grenoble who are world leaders in this research, as well as be embedded in an international project team with outstanding academics and industrialists. You will be enrolled at Université Grenoble Alpes' PhD program and enjoy a number of international exchange visits (secondments) during the project.
- *Impact and Internationality*: you will interact with companies that are active all around the globe, including market leaders in major industries (chemical, food & pharma, process, minerals, plastics)
- *A Full Time Position*: French standard PhD student working time for three years
- *A Fully Financed Research Project*: you will receive a fixed monthly salary of roughly €2707 pre-tax and contributions (a higher-than-average PhD salary in France) . A travel budget is available for secondments, visits, as well as presentations at conferences. There is budget for performing the research (office, access to computer clusters, etc.). Mobility and **additional family allowance** as for all other EC-financed ITNs is available as well.

Eligibility Criteria

As the project is funded within the Marie Skłodowska-Curie Actions (MSCA), researchers can be of any nationality but need to demonstrate transnational mobility. To be eligible applicants **must satisfy the requirements** that apply to all Marie Skłodowska-Curie Early Stage Researchers, therefore on the date of appointment (their start date) applicants:

- **must not** have more than 4 years of research experience.
- **must not** hold a PhD.
- **must not** have resided or carried out their main activity (work or study) in the country where the post is based for more than 12 months in the previous 36 months.
- Applicants must be available to start the PhD in September-December 2019.
- To enroll in the local graduate school, applicants must (soon) be in possession of their Master's degree or equivalent/postgraduate degree (5-year university education).

Selection and Application process

- Applicants will be reviewed **without regard to sex, race or nationality**. Applications from **female scientists and engineers** and **ethnic minorities** in are particularly encouraged.
- Applicants must **fulfill the EC eligibility criteria** set by the European Commission (see above)
- **Important**: to apply, upload **a 1 page CV** and **a 1 page motivation letter** (please mention the **PROJECT TITLE** and **briefly address each skill as listed above**) that is packaged in a **single .zip file** named as "FAMILYNAME_FIRSTNAME.zip" via this link: <https://mycore.core->

cloud.net/index.php/s/iuwphh54OzlGpNX. The password for accessing the upload link is "caliper". Simply put in your password then drag & drop your file into the box.

- All other formats and document content (e.g., longer CVs) **will NOT BE CONSIDERED for the application process. Email applications will NOT BE CONSIDERED.**
- By uploading your **CV and motivation letter** you agree that this information - while kept strictly confidential - will be processed and stored by the us for the **time span of the recruitment process.**
- Include the names and contact information of **up to three references** in your application; if possible add letters.
- Selection will be made through structured skill-based review evaluation from CV and motivation letter. After selection for the shortlist, an (online) interview conducted by at least two people (if possible from the Caliper network) will follow. Additional information may be requested for the (online) interview.
- **As there are multiple positions available in Caliper, applicants are advised to indicate whether they have applied to or plan to apply to other positions in this consortium.**

Travel

In this ITN consortium, each recruited researcher will be seconded to other beneficiaries and/or to partner organisations for a duration of up to 30% of his/her recruitment period. For this project currently two secondments are tentatively planned: 3 months in the BOSCH company (Germany), as well as 6 months in Graz (Austria). Also attendance in off-site training events and meetings is expected. All travel is fully funded. Additional family allowance is provided if the applicant can provide evidence of eligibility (marriage (equivalent) and/or dependent children) at the beginning of the appointment.

Further Information (NOT for submitting applications unless there is a problem)

Edward Andò (edward.ando@3sr-grenoble.fr)

Gioacchino Viggiani (cino.viggiani@3sr-grenoble.fr)