

# SPIN

MONITORING A  
RESTLESS EARTH

## SPIN ESR 4.1: Ground motion and unrest triggering on volcanoes

**Host institution:** Dublin Institute for Advanced Studies, Ireland

# DIAS

Institiúid Ard-Léinn | Dublin Institute for  
Bhaile Átha Cliath | Advanced Studies

### Supervisors:

main supervisor: Chris Bean, Dublin Institute for Advanced Studies (DIAS)

co-supervisor: Andrew Bell, University of Edinburgh

**Application deadline:** 31.3.2021

**Earliest possible starting date** 23.08.2021

### General information

This PhD position is one of the 15 Early Stage Researcher (ESR) positions within the SPIN project (<http://spin-itn.eu>). SPIN is an Innovative Training Network (ITN) funded by the European Commission under the Horizon 2020 Marie Skłodowska-Curie Action (MSCA).

SPIN will focus on training 15 PhD candidates in emerging measurement technologies in seismology. We will research the design of monitoring systems for precursory changes in material properties, all while optimizing observation strategies. The unique interdisciplinary and inter-sectoral network will enable PhDs to gain international expertise at excellent research institutions, with a meaningful exposure of each PhD to other disciplines and sectors, thus going far beyond the education at a single PhD programme. For further information on the project, please consult our website at: <http://spin-itn.eu>.

### Project description

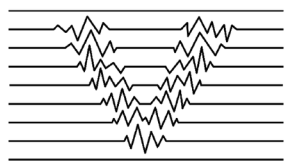
Volcanoes are highly heterogeneous, exhibit a multitude of source types and are difficult to image. However dynamic excitation (ground shaking) from both local and regional earthquakes trigger volcano seismicity so can yield additional information about both the pre-eruptive state of volcanic systems and about material behaviour. The precise mechanisms driving this triggering of volcanic unrest are not fully understood, in particular the relative importance of the specifics of earthquake related ground motion (e.g. translations and/or rotations) versus the intrinsic state of volcanic materials at a given point in time (e.g. related to time varying stress and fluid saturation levels within the volcano). In this project we address these problems using complementary datasets that include (i) both local and regional dynamic triggering of events prior to and during the 2016 eruption of Sierra Negra volcano, Galapagos Islands and (ii) a two month duration repeat active shot experiment (at 15 min intervals) at Teide volcano, Tenerife that exhibits dramatic changes in seismic wave velocity, associated with meteorological conditions. Work will be supported by numerical simulations of dynamic excitation with a specific focus on non-linear behaviour of volcanic materials. A key aim is to better understand the role that the interplay between ground motion and the detailed properties of a volcanic edifice play in the volcanoes pathway to eruption. There will be an opportunity to undertake volcano-related field work as part of this project, likely in Iceland.



Funded by the European Union's Horizon 2020 research and innovation programme

under the Marie Skłodowska-Curie grant agreement No. 955515.





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## Required skills and experience

We welcome applications from candidates who fulfill the following criteria:

- A completed research-oriented university degree, such as a Master's degree or BSc Hons, in a relevant field (e.g. Geophysics, Physics, ...) The PhD enrollment requirements will depend on the hosting institute, please refer to the individual project descriptions and institute webpages.
- An outstanding academic track record
- An good command of English, both verbal and written
- Dedication and enthusiasm for research, combined with scientific curiosity, reliability and the capacity to teamwork in an interdisciplinary environment.
- A willingness to (i) analyse field data, including the coding of new analysis tools (ii) undertake numerical simulation work (iii) undertake field work

Please ensure that you fulfill the following **eligibility criteria** for ESR (Early Stage Researcher) positions in H2020 MSCA-ITNs, as ineligible candidates cannot be considered:

<https://spin-itn.eu/recruitment/#eligibility-criteria>

## Application Procedure

The **application deadline** is 31.3.2021. Application evaluations will start immediately, and will continue until all positions are filled. We wish to reflect the diversity of society and we welcome applications from all qualified candidates regardless of personal background. The selection will be exclusively based on qualification without regard to gender identity, sexual orientation religion, national origin or age.

### Applications must include:

- A cover letter in which you describe your motivation and qualifications for the position.
- A CV including relevant competences, skills and publication list, if applicable
- Copies of degree certificate(s) and transcripts of records for previous studies (Bachelor and/or Master). Please indicate expected date of graduation if your Master's degree is not completed
- Contact information of two references
- A completed copy of the SPIN application form <http://uhh.de/min-spin-apply>

Applications should be sent in **one single pdf file** with filename `SPIN\_YourLastname\_YourFirstname.pdf` and subject title `SPIN application` to BOTH [geo\\_recruitment@cp.dias.ie](mailto:geo_recruitment@cp.dias.ie) and [spin-applications.min@uni-hamburg.de](mailto:spin-applications.min@uni-hamburg.de)

## Data handling

By applying to a PhD position, you agree that all data concerning your application may be stored electronically and distributed among the supervisors involved in the selection procedure within the MSCA ITN SPIN. If you do not agree, your application can not be processed further, due to the project's centralised recruitment process. The data are used solely for the recruitment process and we do not share information about you with any third party.

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