UNIVERSITÉ DE LA RÉUNION

Research Engineer position

Observatoire de Physique de l'Atmosphère – Réunion (OSU-R)

University of la Réunion, Saint-Denis, France

Position: Research Engineer position in optics, lidar and remote sensing instrumentation.
Job type: Expert in experimental development
Job description
Category : A
Corps : IGR
Location
Administrative : OSU-Réunion The Observatoires des Sciences de l'Univers (OSU) are jointly run by the CNRS and a university, as well as with other research bodies. They promote a territorial organisation of research to improve knowledge in the sciences of the Universe around the following themes: - Solid Earth - Continental Surfaces and Interfaces - Ocean Atmosphere - Astronomy Astrophysics Established in 2011, OSU-Réunion is one of France's 25 OSU. It is placed under four authorities: University of La Réunion, CNRS, Météo-France and IRD. This position will be assigned to Unité d'Appui et de Recherche (UAR 3365), as part of OPAR (Observatoire de Physique de l'Atmosphère de La Réunion), which is the atmospheric part of OSU-R observatories. **Geographical**: University of La Réunion – Reunion Island The University of Reunion Island (Université de la Réunion) is a French university in the Academy of Réunion. It is the first and only European university in the Indian Ocean. Established in 1982, it has grown steadily over the years in terms of student population, geographical sites occupied, courses offered and partnerships forged with local, national and international institutions. The school's ambition is to be the reference university in Indianoceania.
Activities
Main activities: The Observatory of Atmospheric Physics of La Réunion (OPAR) is a unique observation site through the quality of its infrastructure and instruments, and through its location in an area sparsely documented where physico-chemical processes take place that are essential for the understanding of the climate and improvement in its modelling. OPAR is deployed on three sites: one at Roland-Garros airport, one at Saint-Denis campus of University of la Réunion and one at Maïdo observatory at an altitude of 2200m.

OPAR hosts 51 instruments (in situ, passive and active remote sensing) operated routinely and feeding national and international databases linked to national and international networks (WMO/GAW, AERONET, TCCON, WWLLN) and European Research Infrastructures (ACTRIS and ICOS). Among this instrumentation: 5 lidars operated either continuously or manually, and producing products such as wind, temperature, water vapor, ozone and aerosols.

The objective of this Research Engineer position is to lead all activities of preparation, deployment, operation, and future development of the lidars at OPAR, working closely with instrument associated researchers. New developments are not excluded. This includes:
- Knowledge of the different lidar techniques (Mie scattering, Rayleigh, Raman, DIAL, Doppler effect)
- Comprehensive command of the different sub-systems of a lidar: emission (laser), optical paths, reception (telescope), acquisition (detectors et acquisition breadboard), from the alignment, metrology and improvement point of view
- Perform quality tests on the data and provide quality-assured lidar data to scientists
- Implement and/or improve the calibration techniques (sky background, depolarization ratio, etc.)
- Quantify optical metrology instruments' requirements, through analytics, numerical modelling, and bench-top testing.
- Provide advice on the use of a given lidar technique to support the scientific objectives pursued by the instrument PI through in-depth interactions with the latter and potential users of the facilities
- Interact with IT staff to ensure the flow of data towards the multiple networks and infrastructures the facility is involved in.
- Provide guidance in the use of the lidars to support science objectives through extensive interaction with PIs and potential facility users (engineers, technicians, operators) for the deployment of new instruments, maintenance and repair of already existing instruments and daily routine tasks of the observatory.

Conditions of employment:

The position is funded by University of la Réunion. The newly recruited engineer will be accompanied by engineers of the Observatoire des Sciences de l'Univers de la Réunion (OSU-R) and Michaël Sicard, ERA Chair holder at Laboratoire de l'Atmosphère et des Cyclones (LACy).

The position will be located at OSU-Réunion (Saint-Denis campus of University of la Réunion) but regular travels to Maïdo site at an altitude of 2200m are foreseen. Most of the time, the working hours are regular working hours. As part of the lidar system trials on the Maïdo site, shifts (7pm-10pm) and night shifts (10pm-6am) may be applied and may give rise to time off. Maïdo site is equipped with a kitchen and individual bedrooms with private toilets and shower.

Travel between both sites will be made with a service car (or exceptionally with one's personal car and reimbursement of mileage expenses). Working on lasers (class 4) requires compliance with strict safety rules. Safety training will be provided on site by the site's laser safety officer.

The agent will have to sign the OPAR welcome charter and comply with the health and safety rules of the National Park, as the Maïdo site is located in the heart of the Park.

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Qualification
Required: • M.S. or Ph.D. degree in engineering, optics or closely related field • Experience developing lidar software (overlap corrections, depolarization ratios and profiles) and hardware (lasers, optics, detectors and data acquisition) • Experience with lasers, laser safety, optic conception and remote sensing instrumentation • Demonstrated experience with instrument/observational data analysis, data processing to develop derived quantities, data quality assurance and control (QA/QC), signal processing and standard scientific data formats • Proficiency in one or more optical modelling tools for imaging optics, e.g. Zemax, LightTools, etc. • Strong analytical model building and problem-solving capability • Proficiency in English (oral and written) • Autonomous and independent work • Able to work in small teams • Short and concise reports • Ability to work at remote altitude (2200m) Desired: • Proficiency in a programming language (such as MATLAB, Python, C, etc.) for data processing and/or end-user scientific application software • Experience providing scientific data for researchers • Knowledge in meteorology, atmospheric physics, geoscience, or closely related field Additionally, the following are highly desired: • Knowledge of LABView • Excellent written and oral communication and interpersonal skills • Intellectual rigor • Responsivity to react under strong time constraints