HITRI plus
Heavy Ion Therapy Research Integration

INTERNSHIP OPPORTUNITY – CALL FOR APPLICATION

Characterization of the new Microdosimeter Prototype

1. Internship Number: 101008548-1

2. Contract Type: Internship

3. Level: In the process of finalising an undergraduate degree
Or in the process of reading for a master degree
Or in the process of reading for a PhD degree
(Level of internship may vary according to the level of the candidate)

4. Location: MedAustron Ion Therapy Center, Wiener Neustadt, Austria

5. Field: Physics/Engineering - Radiation Detectors for Ion Beams

6. Mode: Full Time

7. Duration: about 16 weeks

8. Possible Date Window: **Start:** between February and March 2022
End: between June and July 2022

9. Grant:
There are two types of internships available:
Type A: Funded at €2000 per month plus €300 for travel
Type B: Internship funded by the applicant or by third parties
Candidates are to indicate whether they are applying for Type A, Type B or both.

10. Description:
MedAustron is one of the four unique cancer treatment facilities in Europe that use proton and carbon ion therapy for cancer treatment. Such therapy makes it possible to irradiate tumours in places that are difficult to reach with minimal effect to surrounding healthy tissue hence significantly reducing side effects. MedAustron offers a unique international state-of-the-art working environment built around a particle accelerator which is used for therapy and research.
This internship is within the microdosimetric group which is investigating the radiation quality of the clinical ion beams using the most advanced prototypes of microdosimeters. The group is working with solid-state microdosimeters (based on diamond and silicon diodes) and gas microdosimeters (based on tissue-equivalent proportional counter). Photon, proton, and carbon-ion beams are constantly investigated. A set of solid-state detectors based on a completely new concept will be available. The researcher will be involved, full-time, in the acceptance tests and the characterization of the novel detectors. The detector performance will be investigated under ionizing radiation. A written documentation of the activities performed will be part of the duties. The job will be performed in collaboration with the microdosimetry group; however, the researcher should be ready to work independently.

11. Candidate Tasks, Duties, Responsibilities:
In preparation of the research activity, the candidate will learn the fundamental principles of microdosimetry.
The activities will include:

- Testing operational characteristics of the detectors which include the determination of the leakage current, and the assessment of the optimal supply voltage

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- Testing the impact of the environmental noise on the measurements in laboratory and in irradiation rooms and explore possible mitigation strategies to reduce the impact of the environmental noise
- Providing the characterization of the novel detectors in photon radiation
- If beam time is available, providing the first characterization of the novel detectors in ion beams
- Report writing on the activity performed

12. Candidate Eligibility:

For grant funded internship Type A:

- Candidates with EU member state citizenship
- Candidates from organisations/universities located within EU member states
- Candidates with citizenship of at least one of the following countries: Iceland, Norway, Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia, Turkey, Israel, Moldova, Switzerland, Faroe Islands, Ukraine, Tunisia, Georgia, Armenia.
- Candidates from Kosovo**

For student funded internship Type B:

- All candidates eligible for Type A internships
- All other international applicants

13. Candidate Requirements:

- Undergraduate studies in physics or engineering.
- Academic knowledge of interaction of ionizing radiation with matter.
- Professional working proficiency in English
- Previous experience in detectors used in ion beams. In particular, the knowledge of the principles of microdosimetry is considered to be an asset.

But also:
Passionate in experimental physics and hand-on investigations.
Ready to work in a team on a non-standard and challenging task

14: Submission Details:

Interested candidates are to submit the following:
a. A motivation letter
b. A Curriculum Vitae
c. Degree transcripts to date
d. Referee Contact Details
e. Valid Covid-19 vaccination certificate. If this is not available at the application stage, candidates may opt to submit it at the interview stage. This should be indicated in the motivation letter.

*NB: A limited number of candidates will be awarded an internship which includes a grant and a limited number of candidates will be awarded a position that does not include a grant. Candidates are to indicate in their motivation letter whether they are applying for a grant internship or a non-grant internship or both. To note that also applying for a non-grant internship does not reduce a candidate's chance of obtaining a grant internship but simply opens the candidate to more possibilities of obtaining an internship position. Candidates who are selected for non-grant internships will be asked to sign a declaration that they can cover their own expenses during the internship.

*NB: Health and disability death insurance will have to be taken care of directly by the candidate.

***This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.'*

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15: Submission Deadline: Wednesday 5th January 2022

16: Submission Contact: Submissions are to be sent by email to: nicholas.sammut@um.edu.mt
Submissions are to clearly state the internship number and internship name in the email subject line and in the motivation letter

17: Remarks:

Only shortlisted candidates will be contacted and advance to the next stage of the selection process.

Individuals engaged under such internship contracts will not be considered "staff members" under the Staff Regulations and Rules of the organisation policies and procedures, and will not be entitled to benefits provided therein (such as leave entitlements and medical insurance coverage). Their conditions of service will be governed by their internship contract and the general conditions of contracts for the services of consultants and individual contractors. Interns are responsible for determining their tax liabilities and for the payment of any taxes and/or duties, in accordance with local or other applicable laws.

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