

**INTERNATIONAL RESEARCH ATTACHMENT PROGRAMMES (i-RAP)**
**IMPORTANT NOTE**

Before applying for any summer/winter programme, read the [GRO website](#) and [Application Guide](#) for important information on:

- General Eligibility Requirements and Application Process
- Course Mapping and Financial Aid
- Visa Application, Travel Advisories and Student Insurance

**University of Cologne ML4Q Undergraduate Research Internship Program 2025**

*Information is accurate as of November 2024.*

<b>Host University Website</b>	<a href="https://ml4q.de/ml4q-internship/">https://ml4q.de/ml4q-internship/</a>
<b>Programme Location</b>	Cologne, Germany
<b>Programme Dates</b>	Only programmes that fall within the vacation period of the NUS calendar tend to be endorsed by NUS.  May to July 2025* June to August 2025* *Internship duration will be between 10 to 12 weeks
<b>Application Deadline</b>	Exact dates will be arranged directly between the internee and the host. <b>15 November 2024</b>
<b>No of Placements:</b>	Unlimited

**ESTIMATED COST OF PARTICIPATION**

1	<b>Programme Fee</b>	Students from non-German universities will have to enrol as visiting students at the University of Cologne. This will require submitting additional documents and paying the semester fee of approximately 250 EUR (which allows visiting students to use public transport for free ( <a href="#">Deutschlandticket</a> ) and university facilities such as canteens and sports centres).  Accepted students will be offered travel costs reimbursement up to 1000 EUR (for overseas applicants) and an internship allowance of 992 EUR per month.
2	<b>Financial Aid Available Through NUS GRO</b>	You should have enough monetary funds to cover the whole i-SP. Your decision to go on i-SP should not depend on confirmation of a scholarship or bursary award. You can consider the following financial aid options to fund your i-SP: <ul style="list-style-type: none"> <li>• <a href="#">NASA Enhancement Bursary</a> (Singaporean Citizens only)</li> <li>• <a href="#">Overseas Student Programme Loan</a> (Singaporeans only)</li> <li>• <a href="#">Post-Secondary Education Account (PSEA) Ad-Hoc Withdrawal</a> (Singaporeans only)</li> </ul> <p>Please note that if you are successful with any financial aid, the funds will only be disbursed to you after completion of the Programme.</p>

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PROGRAMME DETAILS		
3	<b>Academic Content</b>	<p>“Matter and Light for Quantum Computing” (ML4Q) is a Cluster of Excellence established in 2019 within the Excellence Strategy of the German federal and state governments. In ML4Q, scientists from the universities of Cologne, Aachen, Bonn, and Forschungszentrum Jülich come together to spearhead quantum computing research.</p> <p>The ML4Q Undergraduate Research Internship Program aims to raise the interest of talented students in quantum technologies research. It gives an opportunity for hands-on experience in scientific work and an overview of the study performed in the cluster. The interns will work in one of the ML4Q groups under the direct supervision of a postdoc or senior PhD student and the hosting professor. At the same time they are encouraged to take part in seminars and events at the host institute as well as other cluster sites.</p> <p>Interested students can apply once a year and join the research group of their choice for a 10 -12-week summer research internship.</p> <p>This program is designed for BSc students who have completed at least 4 semesters of physics or related studies before their summer research internship starts.</p> <p>The list of Internship projects for 2025 is as follows:</p> <ul style="list-style-type: none"> <li>• Lie algebra approaches to quantum dynamics</li> <li>• Dynamics of Electronic Transport in One-Dimensional Edge States</li> <li>• Josephson Junction Characterization</li> <li>• Self-protection in superconducting circuits</li> <li>• Quantum Error Correction</li> <li>• Quantum Neural Networks and Machine Learning</li> <li>• Scalable Quantum Computing with Rydberg Atoms or Ions</li> <li>• Spin Qubits in Graphene Quantum Dots</li> <li>• Lineshape calculation for ultraviolet photon condensate</li> </ul> <p>Further information on the internship projects is available here:</p> <p><a href="https://ml4q.de/ml4q-internship/">https://ml4q.de/ml4q-internship/</a></p>
4	<b>Eligibility Requirements</b>	<p>To apply for the ML4Q Undergraduate Research Internship Program, you will need to meet the following requirements</p> <ul style="list-style-type: none"> <li>• At least four completed semesters of physics or other relevant program before the internship starts,</li> <li>• Completed course in quantum mechanics by the internship starting date (additional courses relevant for individual projects are listed in the project descriptions),</li> <li>• Excellent academic record reflected in overall GPA.</li> </ul>

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		<ul style="list-style-type: none"> <li>• Proficiency in English corresponding to an IELTS score of at least 6.5 or equivalent (please note you do not need the IELTS certificate to apply)</li> <li>• Research experience is a plus</li> </ul> <p>NUS' generic eligibility requirements apply, please see the GRO website for details.</p>
5	<b>Accommodation</b>	<p>If required, the ML4Q Research School will assist you in arranging accommodation, e.g. in shared flats or students' dormitories (if possible). However, students will be responsible for paying their rent. The accommodation costs vary from city to city, but students usually spend between 500 and 700 EUR on monthly rent. Please note that it is not easy to find accommodation, so once accepted, you should start arranging it directly. ML4Q Research School will provide admitted students with more detailed information on how to proceed.</p>
6	<b>Application Procedure at NUS</b>	<p>Please apply through the NUS Education Records System - Global Education (<a href="#">EduRec-GE</a>) first if you want to do module mapping and apply for financial aid/loans. Applying through EduRec-GE will allow GRO to contact and assist you in times of crisis/emergency while overseas.</p> <p>With an official application through EduRec-GE, you are covered by the NUS Travel Blanket Insurance. Besides, GRO can also provide you with supporting letters for visa application. Read the step-by-step guide we prepared for you on <a href="#">GRO's web</a>.</p> <p>You should also apply to the host university <b>concurrently</b> once you have applied to NUS Edu-Rec.</p>
7	<b>Application Procedure at Host University</b>	<p>The application procedures are as follows:</p> <p>To apply for the program, please fill out the <a href="#">online form</a>. In addition to providing the information requested in the form, you will have to upload the following documents combined into a <b>SINGLE PDF</b> file:</p> <ul style="list-style-type: none"> <li>• Your CV</li> <li>• Motivation letter of max. 1 page (2500 characters)</li> <li>• Transcript of Records (from your completed semesters; if you just started your MSc program, please submit the transcript of your BSc study and a list of courses to be completed in the current semester)</li> <li>• Contact details (name, academic affiliation, e-mail address) of the academic referee (e.g. professor you took courses with, your program coordinator...) who can provide a letter of reference for you. We will contact this person at a later stage to provide a recommendation letter.</li> </ul> <p>Please make sure that your single PDF file does not exceed 5MB and is named as follows: yourname_ml4q_internship.pdf (e.g. smith_ml4q_internship.pdf).</p>

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		<p>If you have any questions, please contact the <a href="#">Research School coordinator</a>.</p> <p>The Research School coordinator and the professors offering the project will evaluate the applications. The evaluation results will be announced to the applicants by <b>mid-January</b> at the latest.</p>
8	<b>Confirmation of participation</b>	<p>To confirm your participation in this programme, you must accept the EduRec-GE offer and the host university offer.</p> <p>Please read the cancellation policy of this programme before accepting and paying for the programme.</p>
9	<b>Course Mapping</b>	<p><b>All course mapping requests are subject to approval by the faculties/departments.</b></p> <p>If you are interested in obtaining credits for your course, you can start the course mapping process via EduRec-GE after you have accepted the programme offer.</p> <p>Students may map up to a maximum of 10 units for each Summer Programme. Over the course of study in NUS, students may map up to a total of 12 units for involvement in the summer programme. Beyond 12 units, NUS Special Term tuition fees will apply, in addition to Summer/Winter Programme fees paid to the host university. Please read the information on the Office of the University Registrar’s website for details.</p>
10	<b>Transcript</b>	<p>Please provide a valid, personal mailing address in the online registration portal so the host can send your transcript to you after the summer programme.</p> <p>Please <b>do not</b> request that your transcript be mailed to the NUS Global Relations Office (GRO). GRO is not responsible for missing transcripts.</p>

<b>ADDITIONAL INFORMATION</b>		
11	<b>Visa Application</b>	<p>Holders of a Singapore passport do not require a visa for visits to Germany lasting up to 90 days. For other nationalities, please enquire with the Embassy of the Federal Republic of Germany.</p> <p>If you need a visa to enter Germany, please start early, as your application may take up to two months.</p>
12	<b>Travel Advisories</b>	<p>Visit the <a href="#">MFA website</a> for travel advisories from the Singapore government in various countries.</p>
13	<b>Student Insurance</b>	<p>NUS will continue to offer NUS Travel Insurance for approved study abroad programmes, including summer/winter programs (SWP).</p>

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		<p>For more information on:</p> <ul style="list-style-type: none"> <li>- NUS Student Travel Insurance Cover, click <a href="#">here</a></li> </ul> <p>Students are responsible for ensuring that they have sufficient travel insurance coverage for the entire duration of their trip (including travel) and are advised to review the insurance coverage/policy to ensure that it meets their needs. Students may purchase additional health and/or travel insurance from their preferred agent.</p> <p>The host university may require you to submit a copy of your insurance certificate, which you can obtain via <a href="#">myPortal@NUS</a>.</p>
14	<b>Contact Information</b>	<p>Questions about the programme?</p> <ul style="list-style-type: none"> <li>- Contact the host university at <a href="mailto:ml4q-internship@uni-koeln.de">ml4q-internship@uni-koeln.de</a></li> </ul> <p>Questions specific to NUS GRO?</p> <ul style="list-style-type: none"> <li>- Contact us at: <a href="mailto:global@nus.edu.sg">global@nus.edu.sg</a></li> </ul>