The aim of RMGs is to develop the capacity of individuals in metrology. EURAMET provides Researcher Mobility Grants to increase the capability of the European metrology researcher community, by supporting countries in building and furthering their capacity in Metrology.

### Research in optical clocks

<table>
<thead>
<tr>
<th>Location:</th>
<th>PTB, Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placed on:</td>
<td>5 July 2022</td>
</tr>
<tr>
<td>Duration:</td>
<td>6 months</td>
</tr>
<tr>
<td>Closing date:</td>
<td>6 September 2022 23:59 CET</td>
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<tr>
<td>Earliest start date:</td>
<td>1 February 2023</td>
</tr>
<tr>
<td>Job Ref:</td>
<td>20FUN01-RMG3</td>
</tr>
</tbody>
</table>

#### Proposed research

The RMG-Researcher will join the team operating the strontium optical lattice clock to set up and install the preparation and interrogation laser systems for the second laboratory lattice clock to expand the measurement capabilities and achieve dead-time-free operation or synchronous interrogation of the combined strontium systems. So far, dead time limits the stability of the Sr clock via the Dick effect and thus the stability of the compound clocks investigated in TSCAC. The task will include the optimization of the laser cooling and atomic interrogation in the new system. The objectives of TSCAC will be complemented by a reduction of the Dick effect-related instability in the strontium lattice clock and thus improving the strontium and compound clock stability. The RMG-Researcher will gain knowledge on highly stable clock laser systems and the operation of an optical lattice clock. This will include advanced laser cooling techniques such as two-stage and sideband cooling. The RMG-Researcher might have an opportunity to contribute to a peer-reviewed scientific paper in the relevant field.

#### Experience requirements

The successful candidate will have a long-standing, proven experience in experimental physics and frequency metrology. The candidate will also have a strong background in quantum technologies-related applications, preferably with laser systems and optical frequency combs. Additionally, a background in the technical aspects of atomic physics experiments (e.g. laser stabilization, laser cooling, spectroscopy and vacuum systems) is requisite.

#### Guestworking organisation

Guestworking organisation must be in a different country to the Researcher’s employing organisation. Physikalisch-Technische Bundesanstalt (PTB) is the National metrology institute of Germany, one of the world’s most influential research institutes with an outstanding record of achievement dating back more than 125 years. PTB measures with the highest accuracy and reliability – metrology as the core competence.

#### Related project

This RMG is linked to 20FUN01 - Two-species composite atomic clocks (TSCAC). The overall objective of the project is to perform metrology research necessary to support the use of multi-species composite atomic clocks as future SI standards.

For more information please see: [https://www.ptb.de/empir2021/tscac](https://www.ptb.de/empir2021/tscac) and [https://www.euramet.org/research-innovation/research-empir/empir-calls-and-projects/](https://www.euramet.org/research-innovation/research-empir/empir-calls-and-projects/)

#### Allowances

The exact allowances can be found by using the "RMG Administrative data" spreadsheet available at [http://msu.euramet.org/downloads/](http://msu.euramet.org/downloads/). The Researcher Mobility Grant does not include a salary allowance. There is a fixed rate allowance of 1800 €/month living allowance (with an additional sum for those with a family who relocates with them), a further 500 € every 3 months as a travel allowance. In addition 1500 € may be claimed every 6 months for attendance at a specific named conference or meeting. Note that some of these allowances are corrected for each country.

#### Eligibility (read carefully before applying)


#### Contact

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JRP coordinator: Nils Huntemann, nils.huntemann@ptb.de, +49(0)531-592 4430

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Applying:

| What to submit: | 1. RMG Administrative Data (Template 9a: RMG – Administrative Data)  
|                | 2. RMG Research Schedule (Template 9b: RMG – Research Schedule)  
|                | 3. Covering letter  
|                | 4. Researcher’s Curriculum Vitae (CV) |

| How to apply: | All applications must be submitted via [http://msu.euramet.org/](http://msu.euramet.org/) |

| Declaration   | Employing Organisation will administer the funds (EMPIR Grant Award) OR  
|               | If, in rare circumstances, the Employing Organisation cannot administer the funds the Guestworking Organisation can administer the funds. In this case a prior written approval is required before submitting the application. The Guestworking organisation is under no obligation to administer the funds and can decline without giving a reason. |