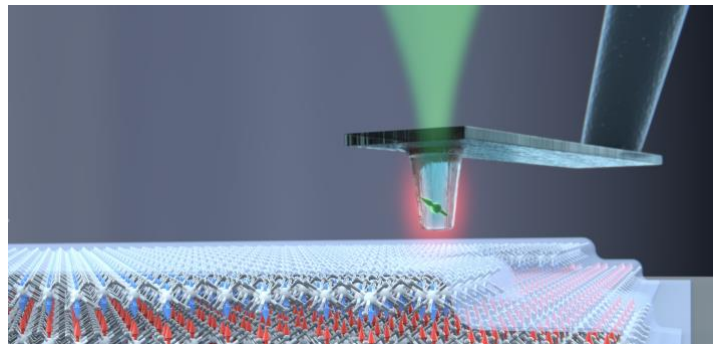


## PhD thesis project: Quantum Sensing of two-dimensional magnets

University of Basel, [Quantum Sensing Group](#), Klingelbergstrasse 82, 4056 Basel

The Basel Quantum Sensing group is seeking an outstanding and motivated candidate to join our team and work on a cutting-edge PhD project in experimental quantum physics. Our group works at the forefront of spin-based quantum technologies [1,2] and their applications [3], with a particular focus on quantum sensing [4] and quantum information processing [5].

In this project you will explore two-dimensional “van der Waals” (vdW) magnetic systems [6] using nanoscale quantum sensing. Such vdW magnets form one of the most vibrant areas of research in magnetism today, offering exciting perspectives to engineer novel types of magnetic order with high potential for future applications. You will work alongside a team of established researchers, where you will benefit from excellent supervision, and the opportunity to apply the unique scanning single spin magnetometry technology that we pioneered [1-3].



The PhD project is embedded in the ongoing ERC consolidator grant “QS2DM.” As a candidate you will engineer and investigate static and dynamic properties of vdW magnets and use single spin magnetometry to address the emerging magnetic properties of these systems.

We are looking for an exceptional candidate who has completed a M.Sc. degree in physics or related disciplines, is highly motivated, and enjoys working on a complex experiment with an international team. In this PhD, you will gain in-depth experience in magnetism, quantum-optics, nanofabrication, scanning-probe microscopy, cryogenics, and coherent spin control – prior experience in any of these is advantageous, but not a strict requirement.

The Basel Physics Department enjoys outstanding international reputation and well-equipped facilities for performing world-class research. We are strongly connected to the international research community and have a clear focus in the quantum- and nano-sciences. We offer a highly attractive research environment and competitive salaries according to Swiss standards.

If you are passionate about exploring the frontiers of physics and quantum technologies and have the skills and motivation to contribute to our exciting research, we invite you to apply. Please send your application, including a CV, transcripts of all diplomas, and contact details of at least two references directly to [patrick.maletinsky@unibas.ch](mailto:patrick.maletinsky@unibas.ch).

Join us in shaping the future of spin-based quantum technologies and explore the fascinating properties of van der Waals magnetic systems!

Further reading:

- [1] “A robust, scanning quantum system for nanoscale sensing and imaging” [Nature Nano. 7, 320](#)
- [2] “Parabolic diamond scanning probes for single spin magnetic field imaging” [Phys. Rev. Applied 14, 064007](#)
- [3] “Probing magnetism in 2D materials at the nanoscale with single spin microscopy”, [Science 364, 973](#)
- [4] “Nanoscale magnetic sensing with an individual electronic spin in diamond”, [Nature 455, 644](#)
- [5] “Realization of a multinode quantum network of remote solid-state qubits”, [Science 372, 259](#)
- [6] “Magnetism in two-dimensional van der Waals materials” [Nature 563, 47](#)
- [7] Such as the Basel quantum sensing startup company “Qnami” [www.qnami.ch](http://www.qnami.ch)