

Masters Thesis (WS2022 – Finley Lab)

# Equipment development: Quantum camera

The field of van der Waals heterostructures, which are stacks on individual atomically thin crystal sheets, has exploded in the last decade. Comparable to a game of Nano-Lego, those van der Waals stacks can be assembled in such a way that yield electro-optical nano-devices with essentially unlimited functionalities. Further, clever stacking can also result in new, fundamental physics.

The principal goal of this Masters thesis is to enhance a current NV widefield imaging system with a ultra-sensitive CCD camera in order to increase the sensitivity of the current system to the single spin per  $\text{nm}^2$  limit.

During the project you will work in close collaboration with a small team of Ph.D. students and postdocs, therefore individual effort is key to drive this Masters project.

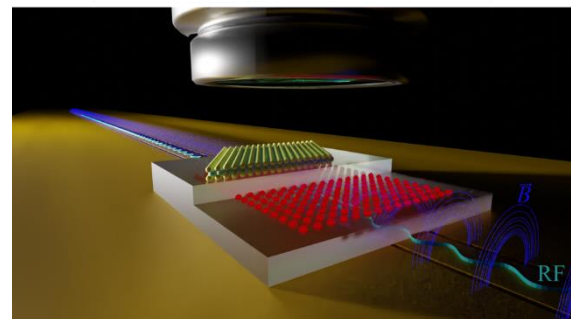
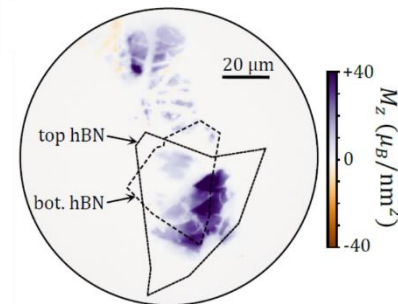
Some knowledge in optics or computer-machine interfacing is beneficial, but secondary to your personal motivation and commitment to this project. **This project requires some serious Python skills, so coders that want to apply their hacking skills to quantum technologies are very welcome here!**

**You should:**

(1) Be highly motivated and self-driven, (2) be practically minded with a get-things-done attitude, (3) enjoy working across a wide range of tasks (processing, optics, electronics) and (4) be willing to work in a very small team on challenging things very long hours ...

**You will get:**

(1) the chance to work on current hot-topic issues in the area of 2D van der Waals physics (2) gain highly sought after abilities in the field of quantum technologies (3) a sound understanding of the physics in atomically thin materials and hopefully (4) a few nice papers.



**Interested?** Please email [finley@wsi.tum.de](mailto:finley@wsi.tum.de) and [Andreas.Stier@wsi.tum.de](mailto:Andreas.Stier@wsi.tum.de)