

DLR is Germany's national research center for aeronautics and space as well as Germany's Space Agency. Approximately 6500 people at 13 locations work in the research areas aeronautics, space, transport, energy and security.

The **Helmholtz Research School on Security Technologies** at the German Aerospace Center (DLR) and the Technical University Berlin offers

PhD scholarship (m/f) on superconducting nanowire single photon detector for cryptography

The mission of the Research School is to contribute to civil security by excellent research and by training and education of young researchers in technology fields which are highly relevant for civil security.

Your Task: An essential part of any security concept in information technology is the information encoding. One of the modern directions in cryptography uses the polarization of single photons as the binary code for encoding. The practical realization of this scheme requires devices capable of generating and detecting single photons. In the past years superconducting nanowire single photon detectors (SNSPD) attracted a lot of attention as promising detector technology for security applications. A single photon produces strong enough excitation in the current-carrying nanowire to locally break superconductivity that results in a voltage signal. Your task is to study physical aspects of the detection mechanism and to evaluate different possibilities of improving detector performance. Specifically, the effect of an external magnetic field and the decrease in operation temperature will be explored.

Your Qualification:

- study in physics, finished with high marks and a Diploma or Master degree that qualifies for starting a PhD study in Germany. Candidates who are about to earn their degree are welcome to apply.
- fluently spoken and written English is essential
- basic laboratory experience
- high motivation and dedication for scientific working
- ability to work creatively in a multidisciplinary team

Interested? More information and the details of the application procedure are available at www.dlr.de/research_school_security

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