

## PhD position in Experimental Optics/Photonics

# Microlaser networks as computational tool

### Project summary

Despite large advances in both algorithms and computer technology, even typical instances of certain computationally hard problems (NP-hard) may be too difficult to be solved on today's computers. In certain areas of application unconventional computational devices could help to overcome these limitations. In this project, a complex network of microlasers with tune-able tunnel couplings [1] will be developed and tested for its suitability as computational tool in optimization tasks. We aim at demonstrating that the proposed device has the potential to outperform standard methods of solving optimization problems by many orders of magnitude.

### Your profile

The successful candidate has a MSc degree in physics preferably with a focus on experimental optics, quantum optics, photonics, or laser physics. He or she will bring excellent experimental skills to the team. An interest in theoretical considerations (statistical physics) is beneficial. Experience in computer programming (e.g. C/C++) is desirable. We expect the candidate to have an excellent command of the English language as well as professional communication and team working skills.

### Supervisors/host group

**Dr. Jan Klaers (project leader)**  
Assistant Professor  
Complex Photonic Systems (COPS)  
Mesa+ Institute for Nanotechnology

**Prof. Dr. Willem Vos**  
Complex Photonic Systems (COPS)  
MESA+ Institute for Nanotechnology



### Contact

If you are interested in joining our group as a doctorate student, please do not hesitate to contact us ([j.klaers@utwente.nl](mailto:j.klaers@utwente.nl)). We are looking forward to your application.

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### References

[1] D. Dung, C. Kurtscheid, T. Damm, J. Schmitt, F. Vewinger, M. Weitz, and J. Klaers, "Variable potentials for thermalized light and coupled condensates", *Nature Photonics* **11**, 565 (2017).