

# KIDS TALK

## „Waveguides for Quantum Simulation - of Hopping Light and Tiny 3D-printing“

**Speaker:** Christina Jörg, AG von Freymann

### **Abstract:**

Solids are complex things – many interesting electronic phenomena are not yet fully understood. Unfortunately, electronic properties in solids are hard to observe: they can not be manipulated easily, there are always defects, and effects happen at very short time-scales.

Evanescently coupled waveguide arrays present a perfect system to simulate electronic properties of solids, where hopping between atom sites corresponds to coupling of light between waveguides. As the paraxial Helmholtz equation and the Schrödinger equation are analog, we can use waveguides arranged on different lattices to systematically examine, e.g., the Quantum Hall effect and topological insulators.

The waveguide systems are fabricated via direct laser writing, using two-photon absorption in a photoresist. This way, arbitrary waveguide structures, as helical waveguides, can be created. Very thin but long waveguides are needed to observe the desired effects (1  $\mu\text{m}$  in diameter and lengths of 500  $\mu\text{m}$ ).

In this talk, find out more about how 3D-printing on a micrometer-scale is used to make topological physics visible.

**When:** Friday, November 20<sup>th</sup> 2015, **10:00 am**

**Where:** Room 46-387/388

All undergraduate and graduate students as well as postdocs are welcome and encouraged to join our discussion!

\*\*\*\*\* COFFEE, TEA AND COOKIES WILL BE SERVED \*\*\*\*\*

For questions, comments or suggestions: [schmidtf@physik.uni-kl.de](mailto:schmidtf@physik.uni-kl.de)

