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Developing new Terahertz Frequency Devices and Perovskite Solar Cells via Terahertz Spectroscopy

physikalisches

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 16:00 Uhr
 Ort: H34

Semiconducting materials are the basis of the modern electronics industry and thus play an increasingly important role in many areas of everyday living. While the vast majority of electronics is based on silicon, there is much research into other semiconducting materials and nanostructured materials which offer great promise, in particular for optoelectronic applications. Understanding electron dynamics in these materials is key to be better understanding of the materials and thus developing new ways to engineer materials for device applications.

In this talk I will explain how we use non-contact terahertz probes to understand and parameterise the electronic properties of III-V semiconducting nanowires. I will then describe how an understanding of the ultrafast electron dynamics in nanowires is leading to new terahertz photonic devices including phase-sensitive photoconductive detectors and ultrafast modulators of THz radiation.

Finally, I will overview our research into evaporated inorganic-organic metal halide perovskite materials, and their role in 3rd generation photovoltaics.

