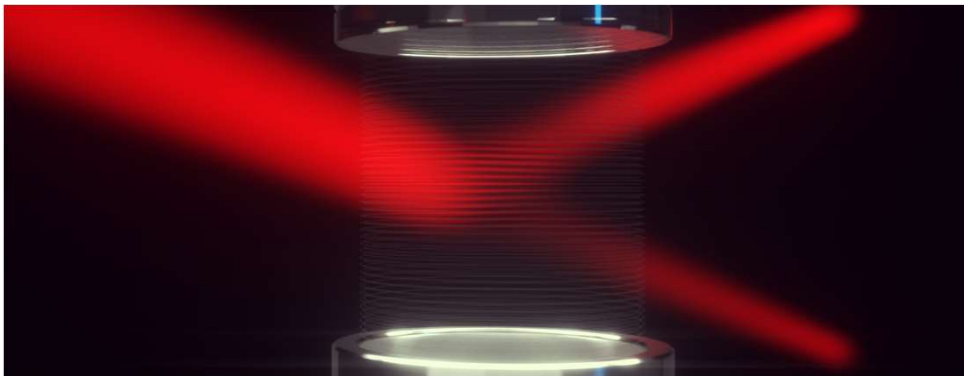


Bachelor or Master thesis projects:

EXPERIMENTAL GAS-PHASE SONO-PHOTONICS.

Most optical elements are made of glass, such as lenses, mirrors and more. At the group **FS-PRI**, the ultrafast photonics research and innovation group at DESY led by Christoph Heyl, we have introduced a way to *deflect a laser pulse without glass, but instead with intense gas-borne ultrasound*.

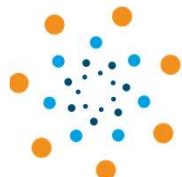
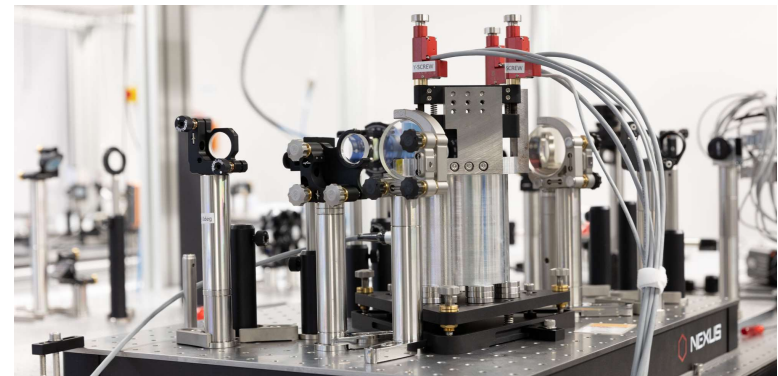


Our paper on this: Schrödel, Y., Hartmann, C., Zheng, J. *et al.* Acousto-optic modulation of gigawatt-scale laser pulses in ambient air. *Nat. Photon.* **18**, 54–59 (2024).

<https://doi.org/10.1038/s41566-023-01304-y>

Next, we investigate ways to improve our approach and to translate other optical elements to the gas phase.

- *Possible Topics:* Employment of various inert gases and gas mixes for advanced gas-based sono-photonics // Towards programmable sono-phonic wave guides // Interferometric 3D imaging of sound-induced pressure fields
- *Work environment:* Highly interdisciplinary work with partners across Germany in a young, motivated, new group. High likelihood of participation in scientific publications
- *Your skills:* Familiarity with laser optics and strong motivation for experimental work
- *Let's talk:* christoph.hey@desy.de and yannick.schroedel@desy.de



PHOTONICS
RESEARCH — INNOVATION

