

Tobias Herr

Thibault Wildi, Alexander Ulanov, Markus Ludwig, Thibault Voumard, Mahmoud Gaafar, Weichen Fan, Bastian Ruhnke

Deutsches Elektronen-Synchrotron DESY and Universität Hamburg, Hamburg, Germany

Modulated waveguide photonics

Abstract

Tailoring the cross-section of a photonic waveguide is a technique that can provide access to fundamentally different nonlinear optical dynamics, including broadband supercontinua, solitons or dispersive waves. In addition, nano-photonic fabrication techniques make it possible to also modulate waveguide parameters in the longitudinal direction. In this presentation, I will provide examples from our recent work, describing how such modulated waveguides can be leveraged for new types of integrated resonators [1], microcombs whose operational complexity is comparable to commercial mode-locked lasers [2], and wavelength transfer of such sources into the visible and ultra-violet domains [3].

References

- [1] Wildi et al., *Optica*, 10, 6, 650-656 (2023)
- [2] Ulanov et al., arXiv: 2301.13132 (2023)
- [3] Ludwig, Ayhan et al., arXiv: 2306.13609 (2023)

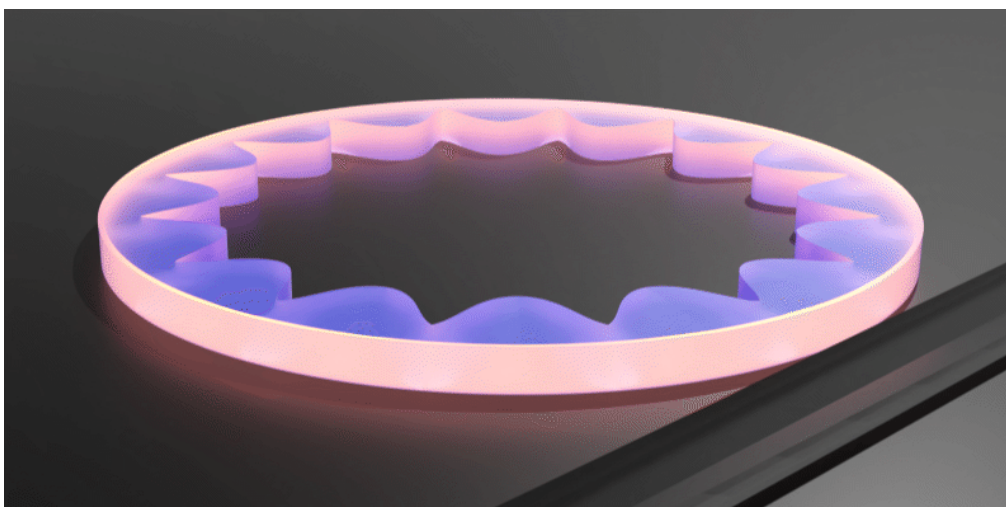


Figure 1: Modulated waveguide microresonator