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THz-photonics by all-dielectric phonon-polariton nonlinear nanoantennas

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The THz spectrum offers the potential of a plethora of applications, ranging from the imaging through non transparent media to wireless-over-fiber communications and THz-photonics. The latter framework would greatly benefit from the development of optical-to-THz wavelength converters. Exploiting Difference Frequency Generation in a nonlinear all dielectric nanoantenna, we propose a compact solution to this problem. The approach is completely transparent with respect to the modulation format and can be easily integrated in a metasurface platform for simultaneous frequency and spatial moulding of THz beams.

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