436. Title:Second harmonic generation based on strong field enhancement in nanostructured THz materials
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Abstract:The THz response of slit structures and split-ring resonators (SRRs) featuring extremely small gaps on the micro- or nanoscale is investigated numerically. Both structures exhibit strong field enhancement in the gap region due to light-induced current flows and capacitive charging across the gap. Whereas nanoslits allow for broadband enhancement the resonant behavior of the SRRs leads to narrowband amplification and results in significantly higher field enhancement factors reaching several 10,000. This property is particularly beneficial for the realization of nonlinear THz experiments which is exemplarily demonstrated by a second harmonic generation process in a nonlinear substrate material. Positioning nanostructures on top of the substrate is found to result in a significant increase of the generation efficiency for the frequency doubled component.