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Terahertz emission due to dynamic optical
modulation of spontaneous polarization in
multiferroic BiFeO_3

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Abstract

BiFeO_3 is well-known to have a large spontaneous polarization in its nature in addition to its multiferroism at room temperature. Optical excitation releases bound electrons, and screens the polarization, which induces a large transient polarization change. The THz emission mechanism differs from the conventional ones such as optical rectification and surge current. We also observe photoassisted polarization flip by weak optical excitation – evidence of avalanche flip of large spontaneous polarization.