

Abstract Submitted
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Ultra-fast domain formation by visible and high-energy light in low-dimensional photoinduced phase transition systems KAORU IWANO, KEK — We propose the detection of domain dynamics in a one-dimensional system by using high energy photons such as synchrotron radiation. The domain here means that of a different phase formed in the background of an original phase. Using high energy photons, it is expected that not only $k=0$ states with k being the momentum of its center-of-gravity motion, but also finite k states are possible to be detected. We theoretically demonstrate how they are observed, with off-resonant inelastic X-ray scatterings and valence photoemissions as concrete examples. In the latter, we particularly show that, in addition to basic two degrees of freedom, namely, the center-of gravity and the spatial size of the domain, spin excitations inside the domain play essential roles.

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