

Strain-induced dynamics monitored by time-resolved x-ray diffraction

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The interplay of lattice dynamics with the electronic, magnetic or optical response of solids and nanostructures is a potential route to drive functional processes in novel materials. Photoacoustic generation of strain pulses allows for generation and control of coherent strain pulses on fast time and short length scales.[1] The deformation dynamics due to thermal and coherent strain fields can be monitored by time-resolved x-ray diffraction and reflectivity measurements.[2] The combination of photoacoustic strain generation and time-resolved x-ray diffraction has even found applications as active x-ray optics for synchrotron-based experiments.[3]

This talk will discuss examples of strain-induced dynamics in magnetic thin films and piezoelectric materials and illustrate new possibilities for time-resolved x-ray experiments due to the improved beam properties of the EBS upgrade.

References

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