Mach-Zehnder interference microscopy using X-ray laser

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Recently, an x-ray laser is used as the coherent soft x-ray source for several applications; such as interferometry of the electron density of laser plasmas and the study of the dynamics of a surface domain structure of ferroelectric materials. At the Advanced Photon Research center, we have developed a fully coherent x-ray laser (XRL) at the wavelength of 13.9 nm. We propose a Mach-Zehnder interference microscopy with the fully coherent XRL using two transmission gratings as beam splitters.