



Extended Data Fig. 5. | Procedure for extracting the real-space surface disorder layer from the interference fringes induced by surface disorder. a, DFXM image exhibiting interference fringes. **b,** Line profile (blue curve) obtained by elliptical summation of the interference fringes, with background removal performed by a sixth-order polynomial fit (red curve). **c,** Oscillation profile after background subtraction. **d,** The positions of the oscillations correspond to the interference distances measured from the surface, yielding the parabolic dot distribution shown below. Fitting of this distribution with a Gaussian function provides the shape of the local surface disorder layer in real space, expressed in \AA .