

Phase contrast (II)

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EPFL Phase contrast (II) program

- Q and A from online week 8 lectures and exercises
- Demos: high-resolution (phase contrast) TEM of crystalline samples
 - Au-Pd nanoparticles on “regular” Talos TEM (defocus, delocalisation, nanocrystal orientation, objective aperture)
 - GaAs nanowires on Cs-corrected Titan Themis TEM

EPFL Phase contrast transfer function (PCTF)

- $T(\vec{u}) = A(\vec{u})E(\vec{u})2 \sin \chi(\vec{u})$
- If we only have defocus and spherical aberration:

$$\chi(\vec{u}) = \pi \Delta f \lambda u^2 + \frac{1}{2} \pi C_s \lambda^3 u^4$$

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- Scherzer defocus: $\Delta f_{Sch} = -1.2\sqrt{C_s \lambda}$
- Resolution at Scherzer defocus: $D_{Sch} = 0.66 \lambda^{3/4} C_s^{1/4}$