

Design Rules for Bitmaps:

- Determine the parameter settings for a regular pattern that is suitable for the respective sample
 - Ion - Current (results in different Total diameter)
 - Overlap - results in different Pitch size and thus different resolution
- Design Bitmap in that way, that when loading it into the FIB program and adjusting its size one pixel size equals the Pitch size determined in the previous experiment
- Different resolutions in x, y direction are possible

Example:

Determine milling parameter:

- Size: $1\mu\text{m} \times 1\mu\text{m}$
- Current: $10\text{pA} \Rightarrow \text{Total diameter} = 12\text{nm}$
- Overlapp: $50\% \Rightarrow \text{Pitch} = 6\text{nm}$
- Resolution: $1\mu\text{m} / 6\text{nm} = 166.67 \text{ px} / \mu\text{m}$

Determine design parameter

Version 1: Giving the desing size and calculate the needed resolution:

Scale between milling and design: $1\mu\text{m}$ (milling) - 1cm (design)

- Size: $1\text{cm} \times 1\text{cm}$
- Resolution: $166.67\text{px} / \text{cm} = 423.3\text{px} / \text{inch} = 423.3\text{dpi}$

Version 2: Giving the resolution and calculate the design size

Resolution: 300dpi

Length: $166.67\text{px} / 300\text{dpi} = 0.556" = 1.41\text{cm}$

\Rightarrow Design: Square: $1.41\text{cm} \times 1.41\text{cm}$ @ 300 dpi

List of Total diameter[nm] in dependence of Ion-current @ 30 kV:

1pA	7
10 pA	12
30 pA	16
50 pA	19
100 pA	23
0.3nA	33