

## Line-element examples for grey samples ( $0,2 \leq Y_r \leq 5$ )

$F_u(Y_r)$  is called the line-element function of  $f_u(Y_r)$ .

Both functions are normalized to the surround value:

$$\frac{d[F_u(Y_r)]}{dY_r} = f_u(Y_r) \quad [1]$$

$$F_u(Y_r) = \int \frac{f'_u(Y_r)}{f_u(Y_r)} dY_r = \int \frac{b}{1+b Y_r} dY_r \quad [2]$$

Example for  $L^*(Y_r)$  &  $\Delta Y_r$  with  $Y_{ru}=1$ ,  $b=6,141$ :

$$L^*_u(Y_r) = \frac{L^*(Y_r)}{L^*(Y_{ru})} = \frac{\ln(1+b Y_r)}{\ln(1+b)} \quad [3]$$

$$f_u(Y_r) = \frac{\Delta Y_r}{\Delta Y_{ru}} = \frac{1+b Y_r}{1+b} \quad [4]$$