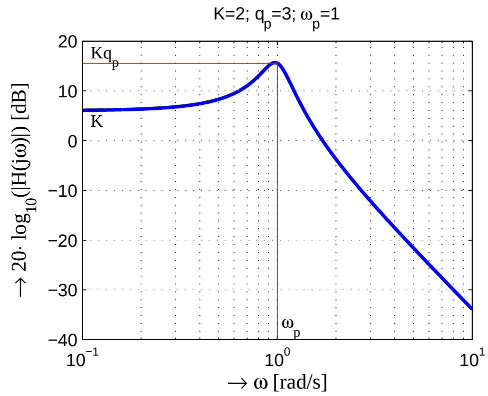
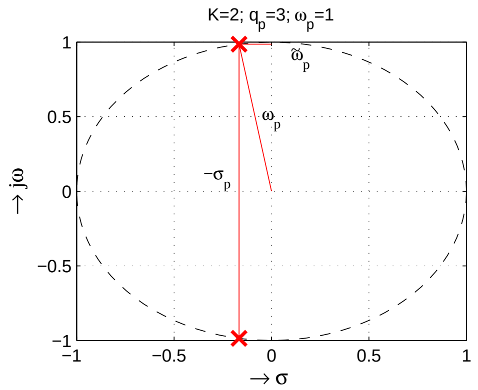
4.4.3 Bode-Diagramm und Pol- Nullstellenverteilung von verschiedenen UTF 2. Ordnung

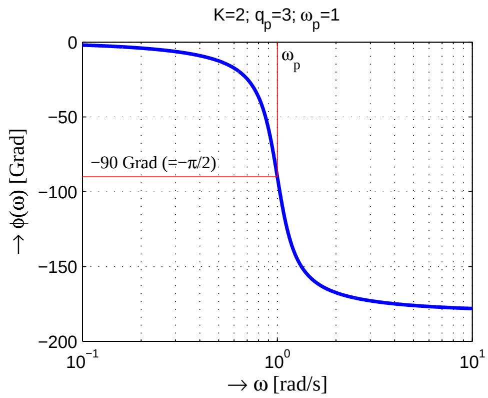
Für alle Beispiele a) bis f) gilt: $2\sigma_p = \frac{\omega_p}{q_p}$ (Formel 4.17), wobei $|q_p| > \frac{1}{2}$ sein muss, damit die Pole konjugiert-komplex sind.

a) **Tiefpass**

$H(s) = \frac{K \cdot \omega_p^2}{s^2 + 2\sigma_p s + \omega_p^2}$

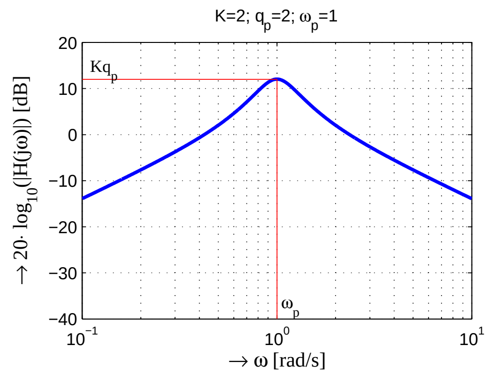


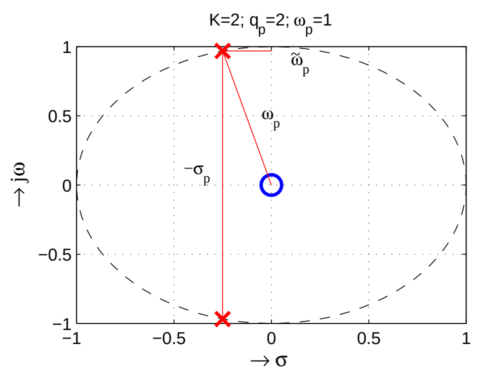


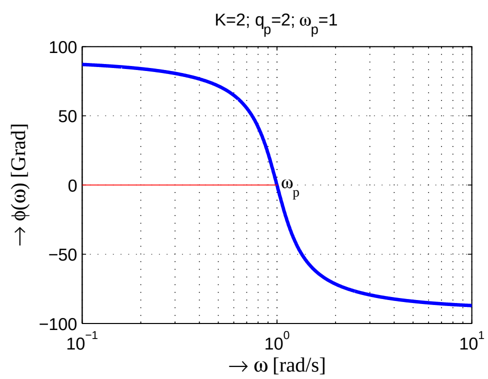


b) **Bandpass**

$H(s) = \frac{K \cdot \omega_p \cdot s}{s^2 + 2\sigma_p s + \omega_p^2}$

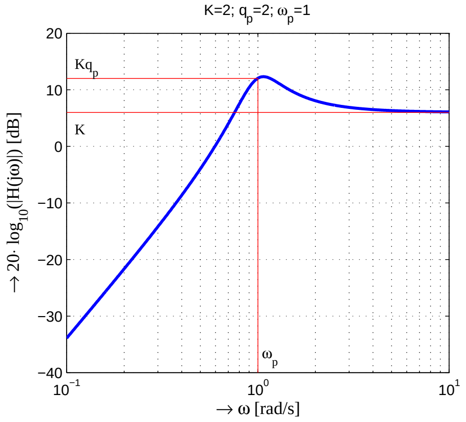


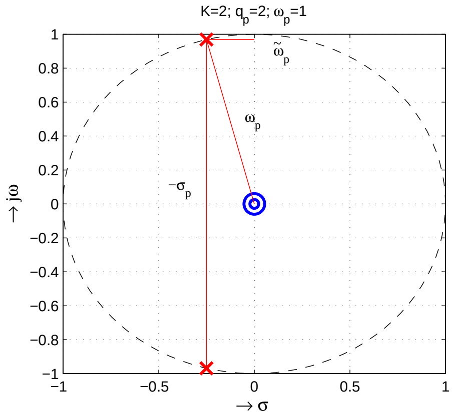


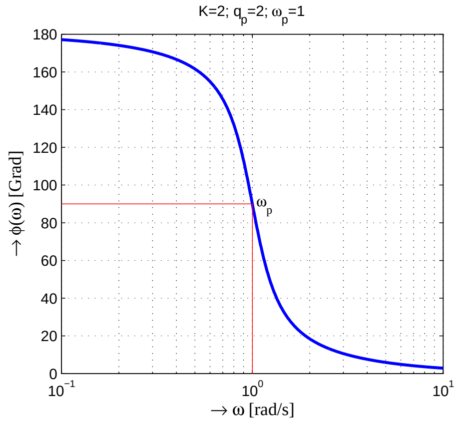


c) Hochpass

$$H(s) = \frac{K \cdot s^2}{s^2 + 2\sigma_p s + \omega_p^2}$$

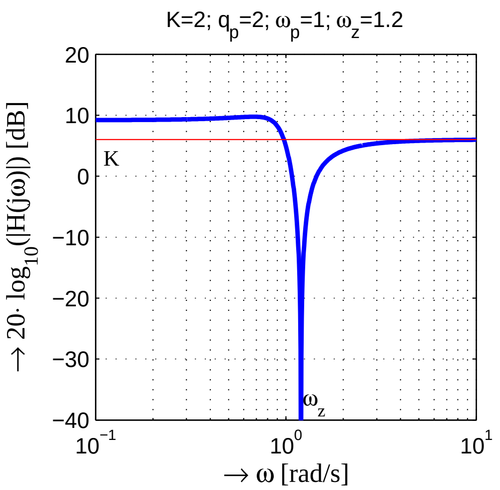


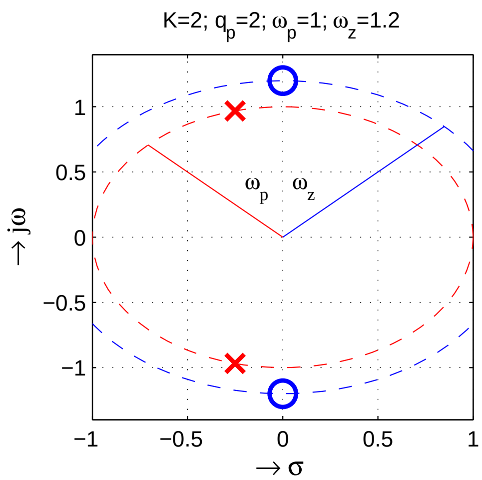


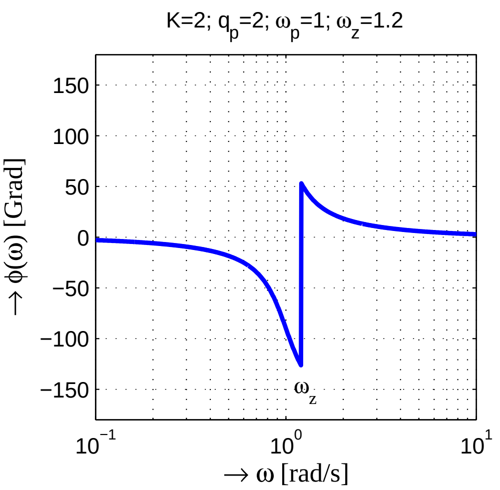


d) Tiefpass mit endlichen Nullstellen

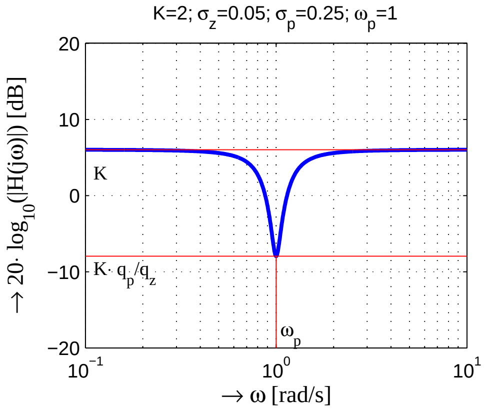
$$H(s) = \frac{K \cdot (s^2 + \omega_z^2)}{s^2 + 2\sigma_p s + \omega_p^2} \text{ mit } \omega_z > \omega_p$$

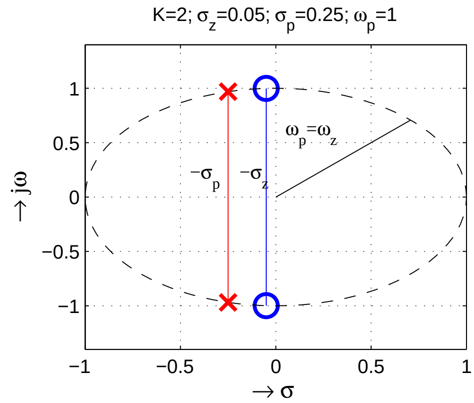


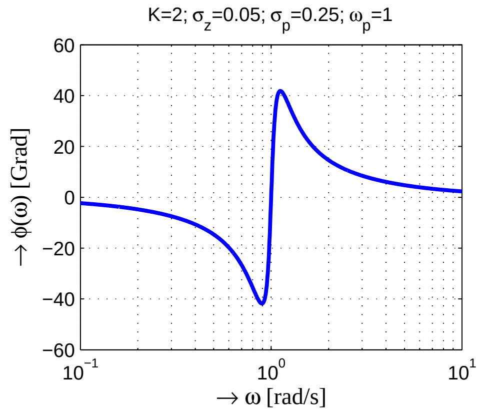




e) **FRN**
(**frequency rejection network**, **Notch**)
$H(s) = K\frac{s^2+2\sigma_z s+\omega_p^2}{s^2+2\sigma_p s+\omega_p^2}$
mit $\sigma_p > \sigma_z$ (dominates Nullstellenpaar)







f) **FEN**
(**frequency emphasizing network**)
$H(s) = K\frac{s^2+2\sigma_z s+\omega_p^2}{s^2+2\sigma_p s+\omega_p^2}$
mit $\sigma_p < \sigma_z$ (dominates Polpaar)