Représentation de $|G_2(f)|^2$.

$z = e^{2\pi j f}$.

$$G_2(f) = \frac{1}{2}\,\frac{1}{1 - \frac{e^{-2\pi j f}}{2}}.$$

$$= \frac{1}{2}\,\frac{1}{1 - \frac{1}{2}(\cos 2\pi f + j\sin 2\pi f)}.$$

$$|G_2(f)|^2 = \frac{1}{4}\cdot\frac{1}{\left(1 - \frac{1}{2}\cos 2\pi f\right)^2 + \left(\frac{1}{2}\sin 2\pi f\right)^2}.$$

$$= \frac{1}{4}\cdot\frac{1}{1 - \frac{2}{2}\cos 2\pi f + \underbrace{\frac{1}{4}\cos^2 2\pi f + \frac{1}{4}\sin^2 2\pi f}_{1/4}}.$$

$$= \frac{1}{4}\cdot\frac{1}{\frac{5}{4} - \cos 2\pi f} = \frac{1}{5 - 4\cos 2\pi f} = |G_2(f)|^2$$

- $f = 0 \quad |G_2(0)|^2 = 1$
- $f = \frac{1}{4} \quad |G_2(1/4)|^2 = \frac{1}{5 - 4\times 0} = \frac{1}{5}$
- $f = \frac{1}{2} \quad |G_2(1/2)|^2 = \frac{1}{5+4} = \frac{1}{9}$