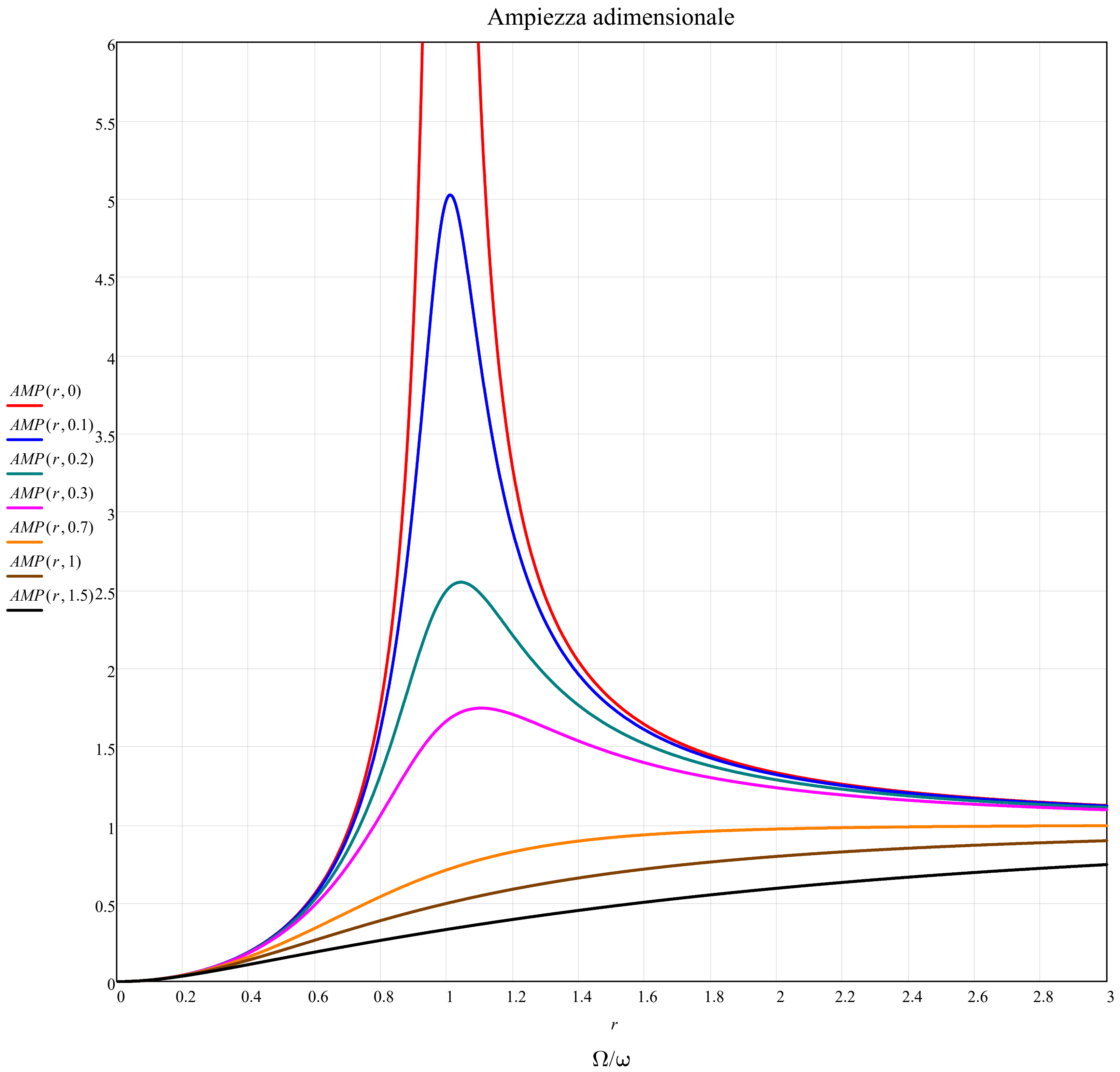
$$AMP(r,\xi) := \frac{r^2}{\sqrt{\left(1-r^2\right)^2 + (2\cdot\xi\cdot r)^2}}$$

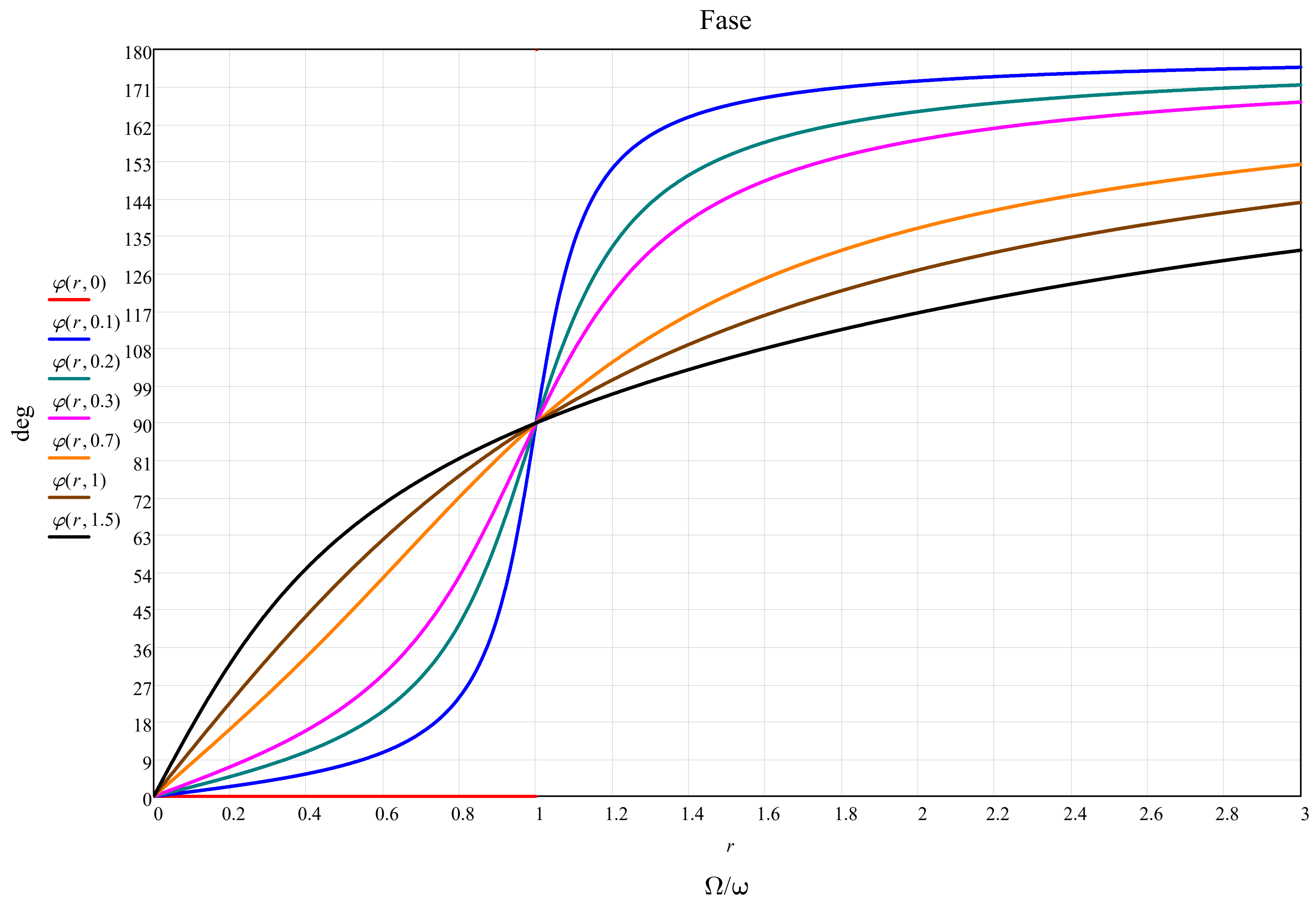
Ampiezza adimensionale

$$\varphi(r,\xi) := \frac{atan2\left(1-r^2, 2\cdot\xi\cdot r\right)}{deg}$$

Fase

$r := 0, 0.001 .. 3$





Dati del sistema vibrante

$M := 20$ Massa della "cassa"

$m := 0.5$ Massa squilibrata

$M_T := M + m = 20.5$ Massa totale

$R := 15\cdot10^{-3} = 0.015$ Raggio dell' orbita (eccentricità)

$k := 1000$ Rigidezza

$c := 30$ Cost. di smorzamento

$\omega := \sqrt{\frac{k}{M_T}} = 6.984$

$\xi := \frac{c}{2 \cdot M_T \cdot \omega} = 0.105$

Dati della forzante

$n := 50$ Velocità angolare del rotore in RPM (giri/min)

$\Omega := \frac{2 \cdot \pi \cdot n}{60} = 5.236$

$T_f := \frac{2 \cdot \pi}{\Omega} = 1.2$

$r := \frac{\Omega}{\omega} = 0.75$

$X_0 := \left(\frac{m}{M_T}\right) \cdot R = 3.659 \times 10^{-4}$

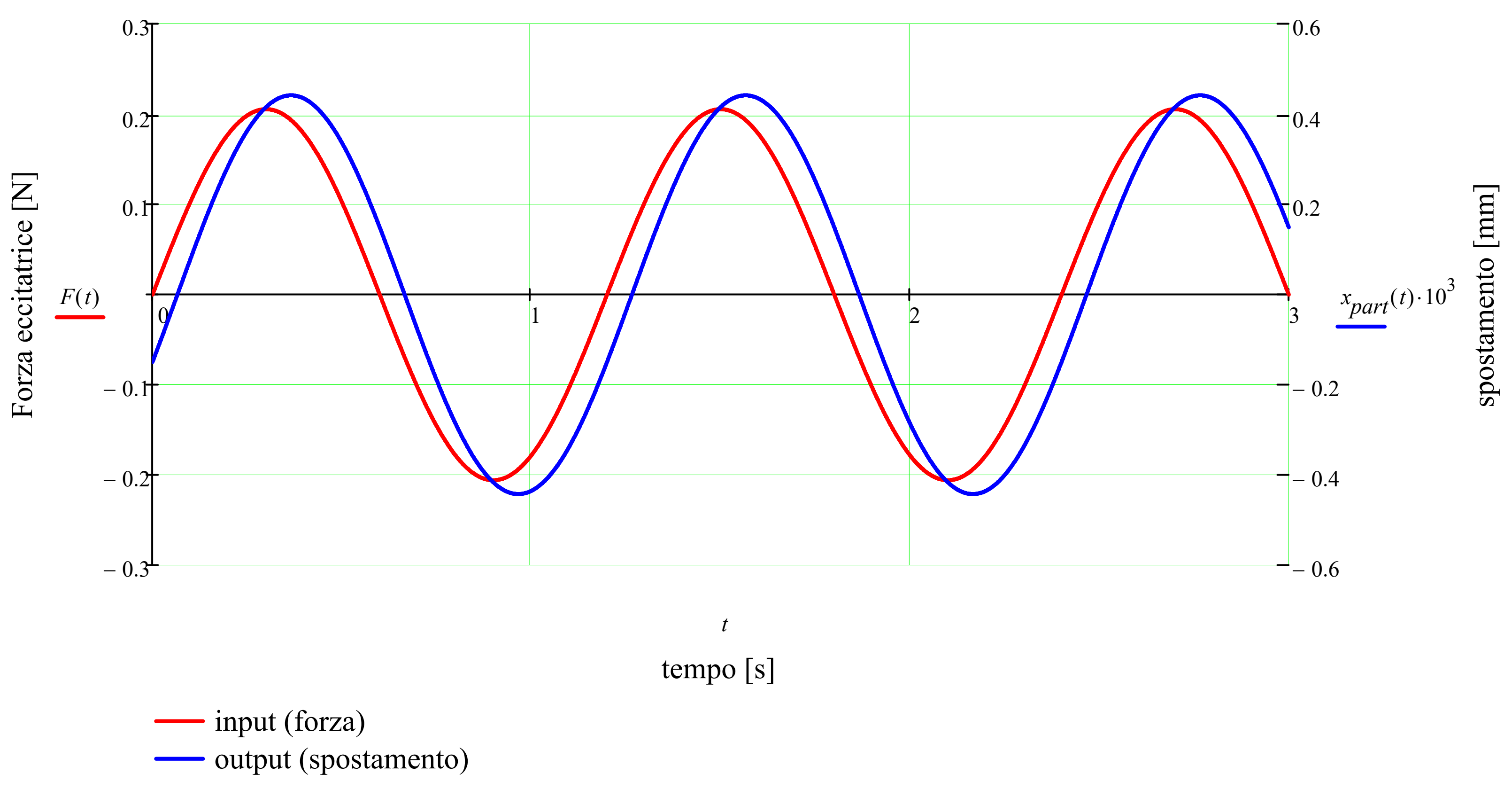
$X := \frac{X_0 \cdot r^2}{\sqrt{\left(1 - r^2\right)^2 + (2 \cdot \xi \cdot r)^2}} = 4.419 \times 10^{-4}$

$\varphi := angle\left(1 - r^2, 2 \cdot \xi \cdot r\right) = 0.344 \cdot rad$ $\varphi = 19.73 \cdot deg$

$F(t) := m \cdot \Omega^2 \cdot R \cdot sin(\Omega \cdot t)$ $F(t) = 0.20561675835602831 \cdot sin(5.2359877559829888 \cdot t)$ Componente della forza centrifuga agente nella direz. del moto

$x_{part}(t) := X \cdot sin(\Omega \cdot t - \varphi)$ $x_{part}(t) = 0.00044190438267680839 \cdot sin(5.2359877559829888 \cdot t - 0.34435549690751766)$

$t := 0, 0.001 .. 2.5 \cdot T_f$



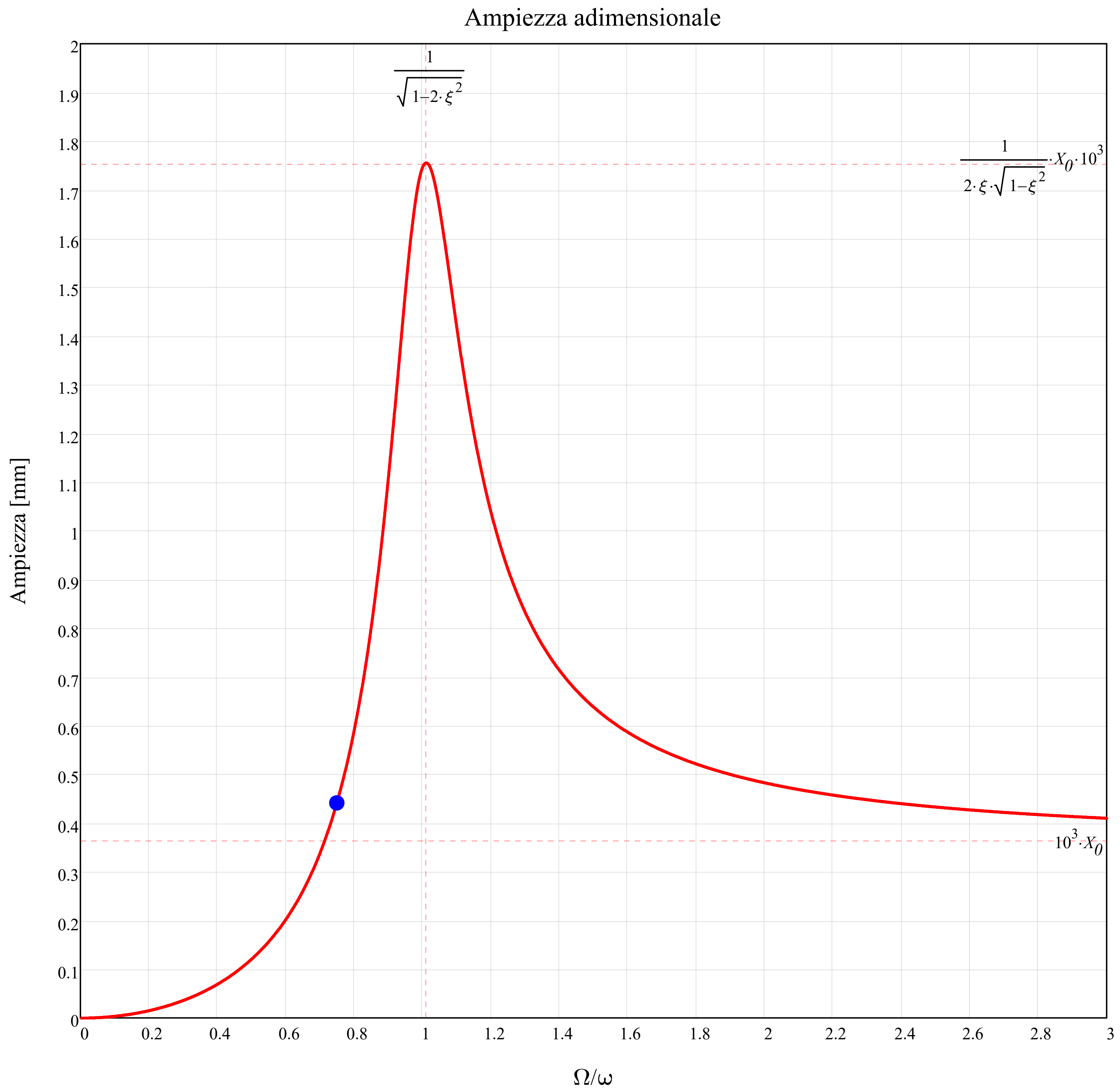
$r = 0.75$ $\xi = 0.105$

$$AMP(r,\xi) := \frac{r^2}{\sqrt{\left(1-r^2\right)^2 + (2\cdot\xi\cdot r)^2}}$$

Ampiezza adim.

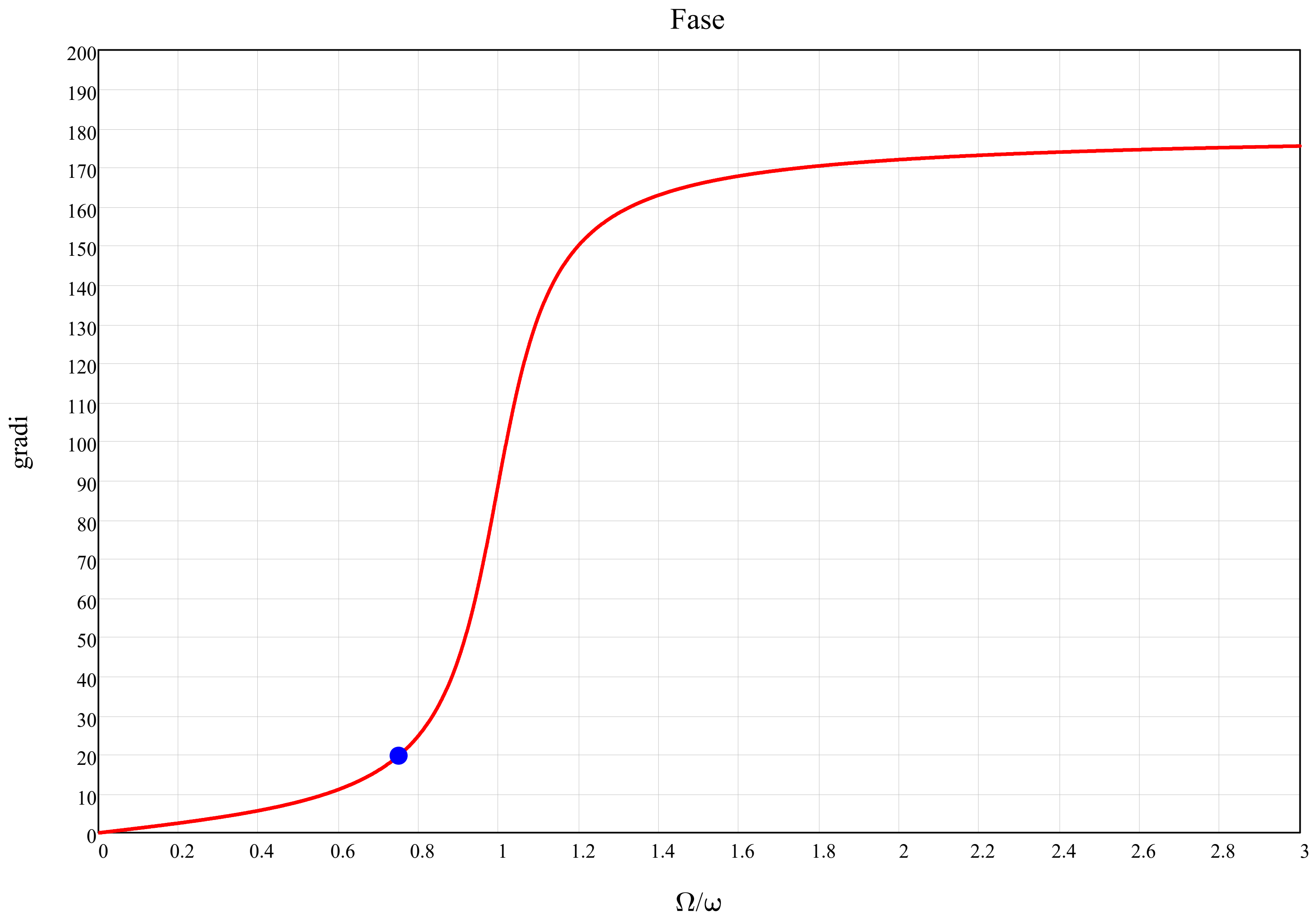
$$FASE(r,\xi) := \frac{angle\left(1-r^2, 2\cdot\xi\cdot r\right)}{deg}$$

$r_x := 0, 0.001 .. 3$



$r = 0.75$ $X\cdot 1000 = 0.442$

$\xi = 0.105$ $\varphi = 19.73\cdot deg$



ascissa del massimo $r_{max} := \frac{1}{\sqrt{1-2\cdot\xi^2}} = 1.011$

ordinata del massimo $z := \frac{1}{2\cdot\xi\cdot\sqrt{1-\xi^2}} = 4.799$