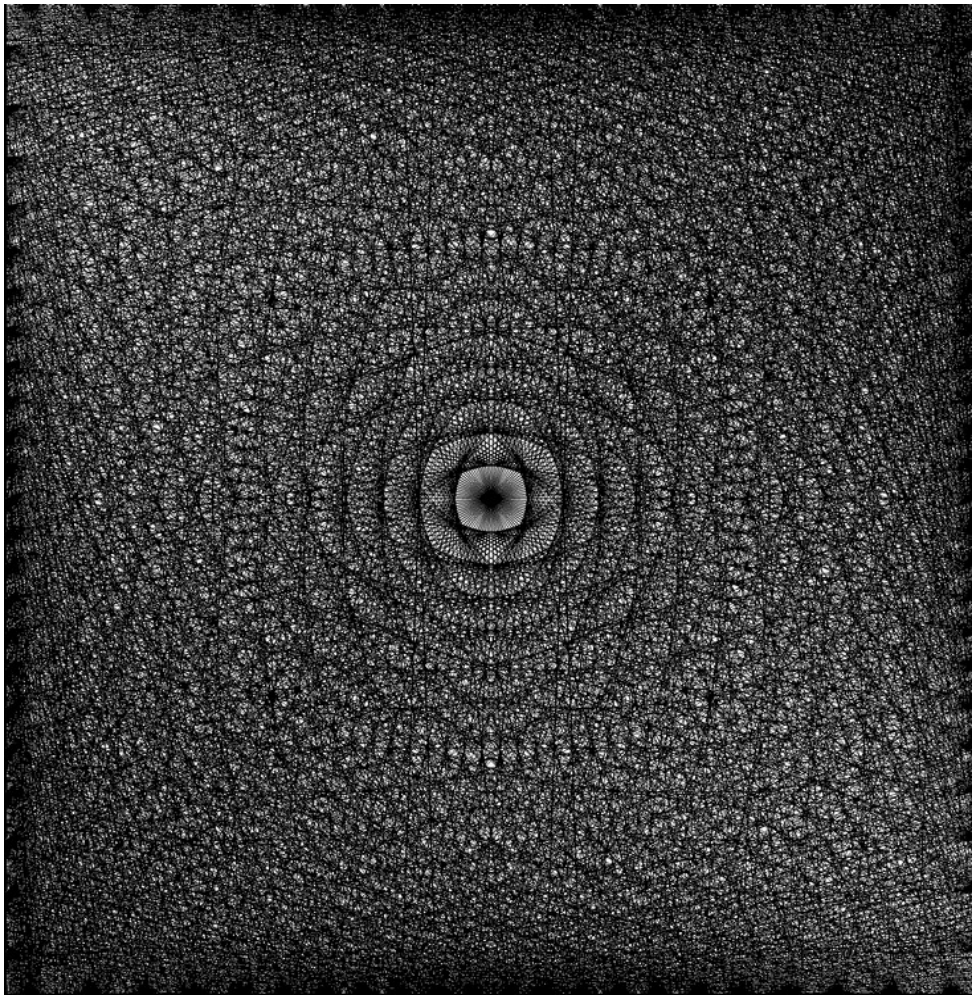
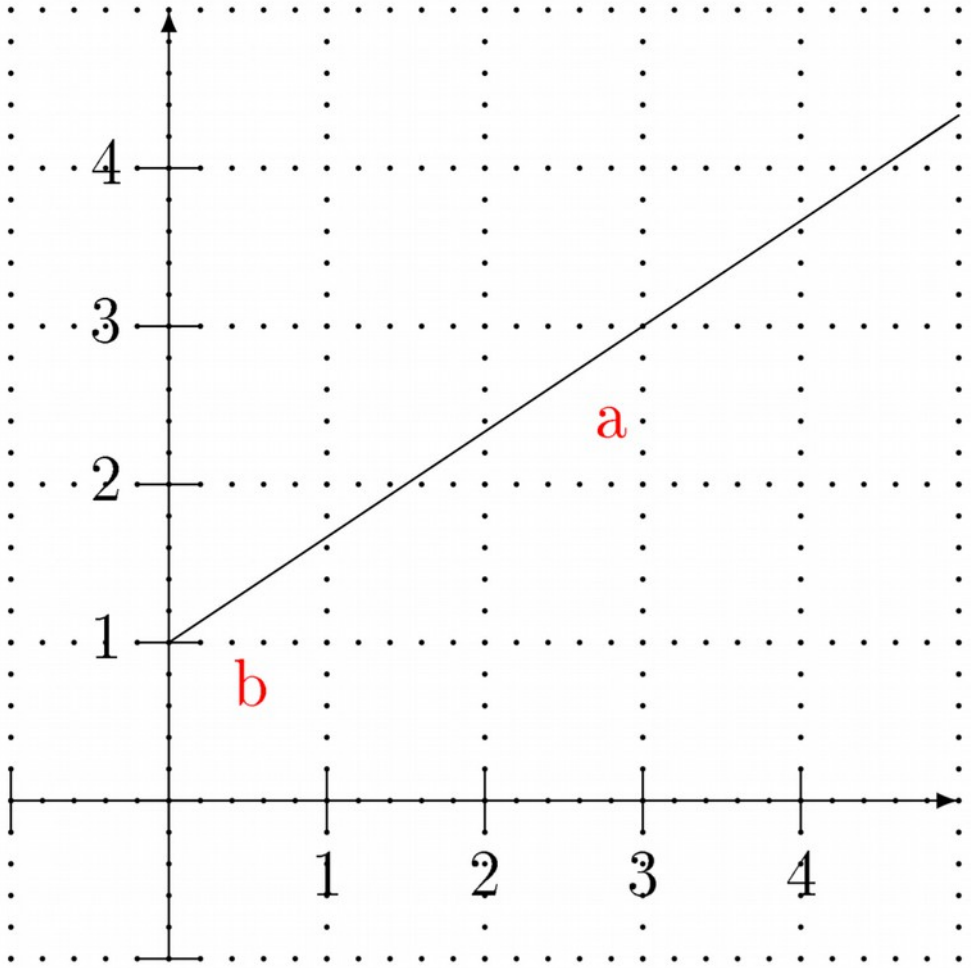
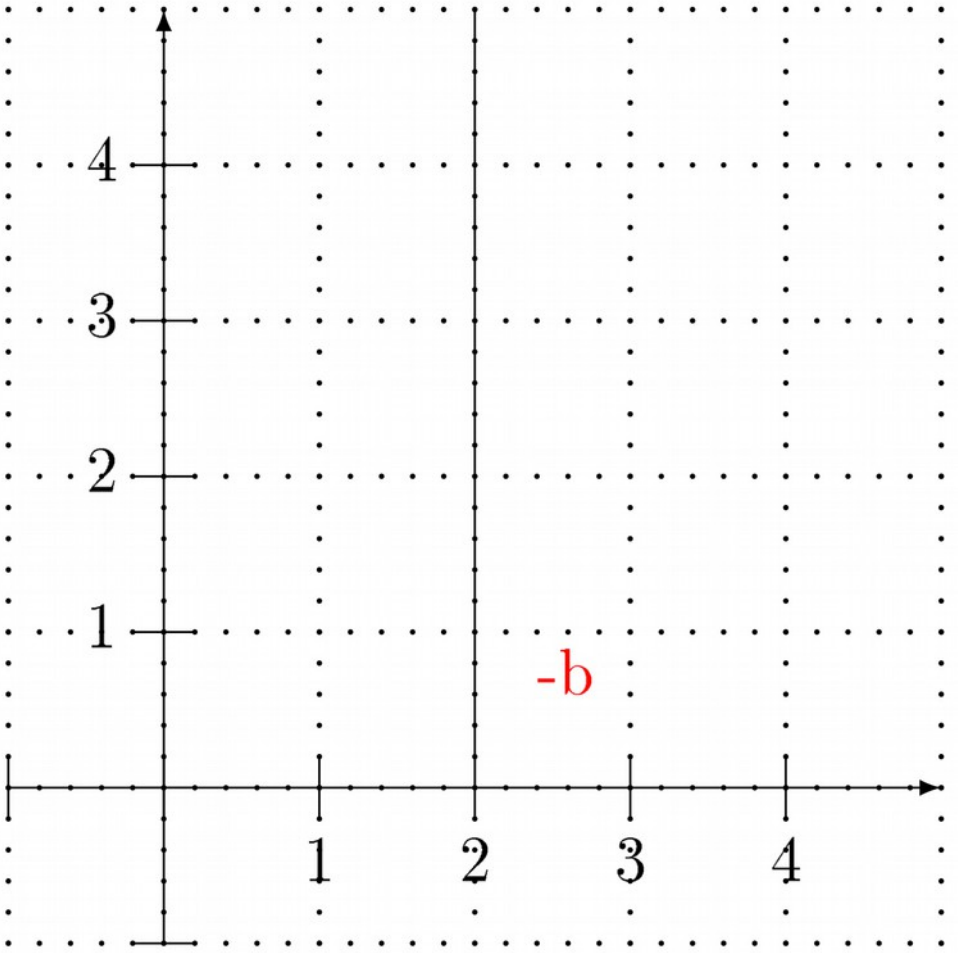
Optimisation de la restitution d'un son

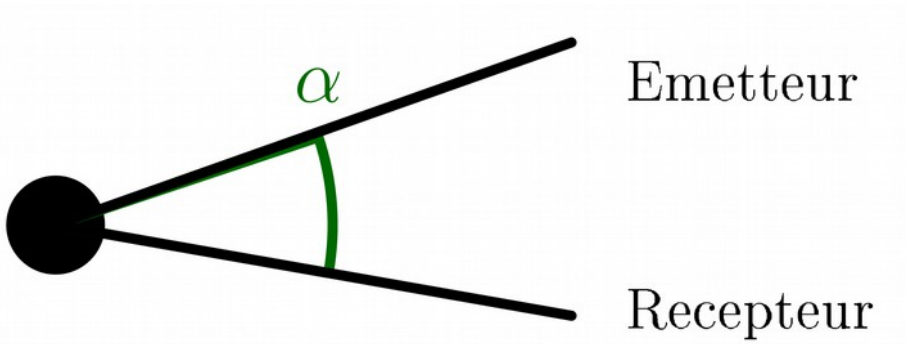


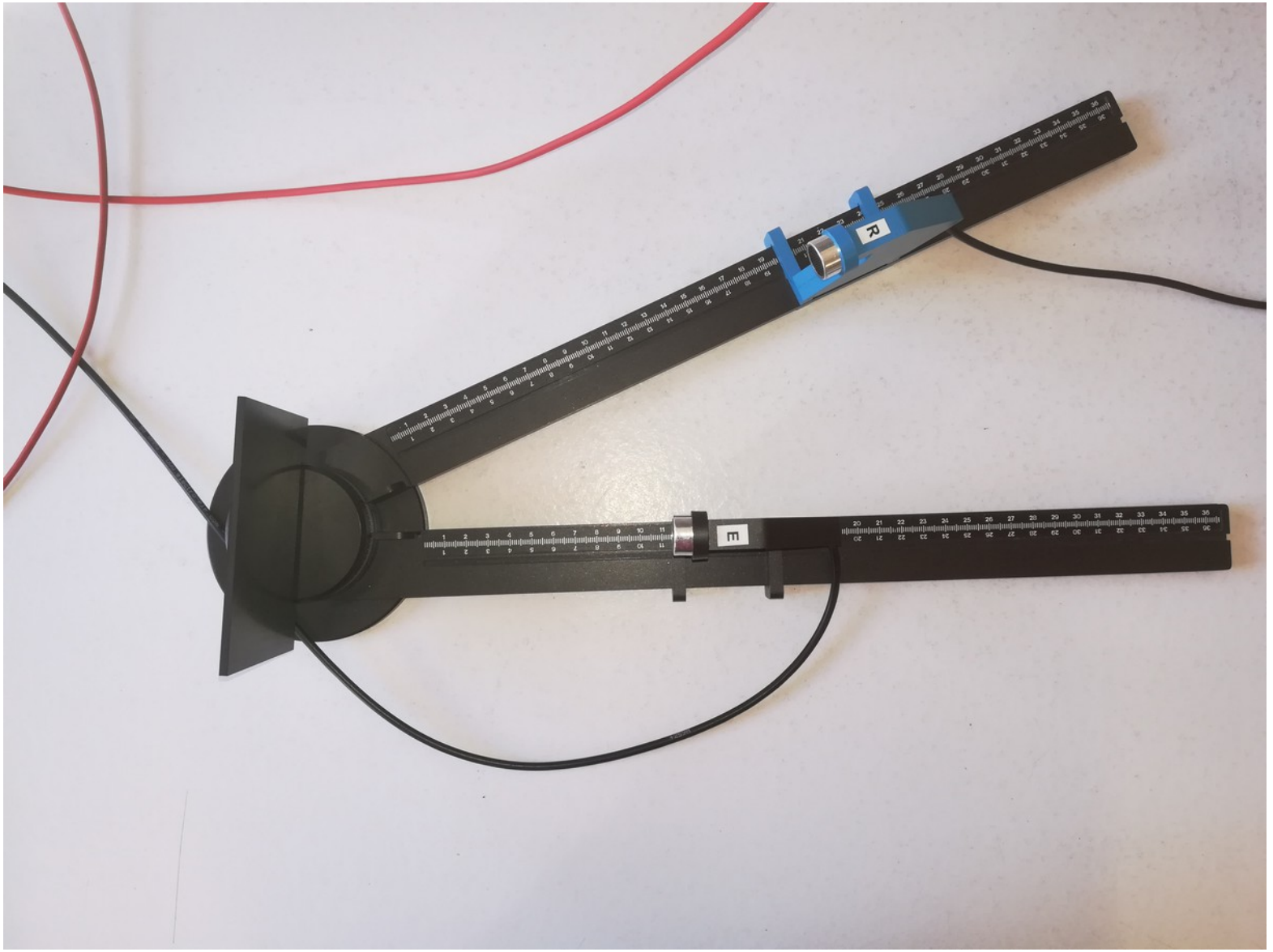
$a \times x + b$



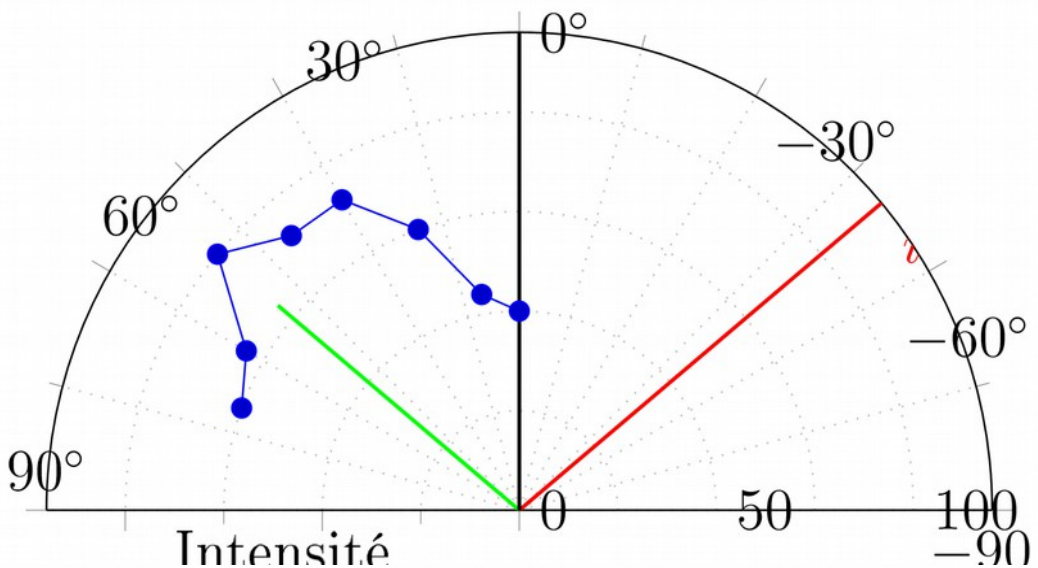
Cas a nul : droite x=-b

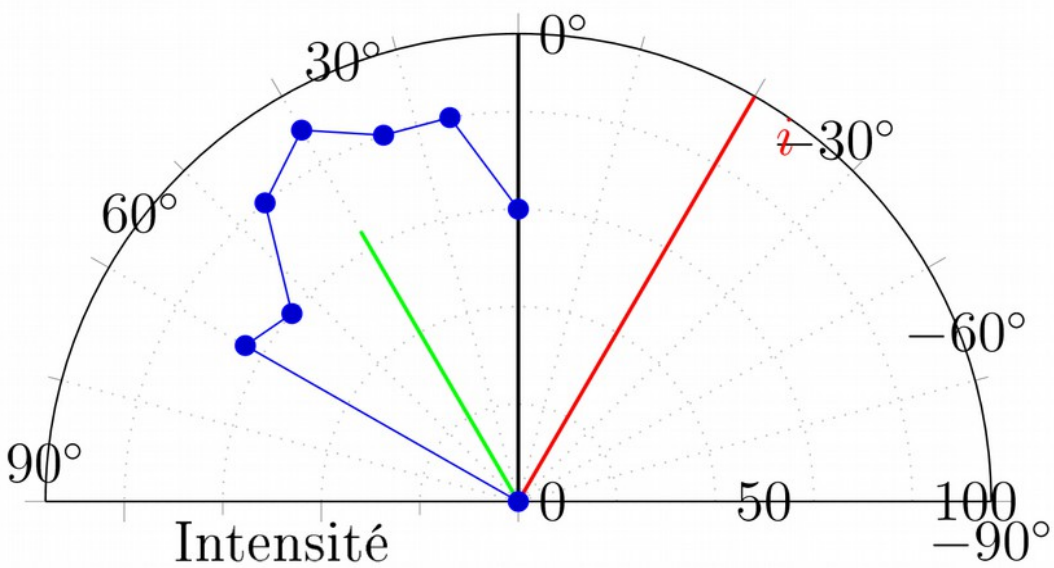


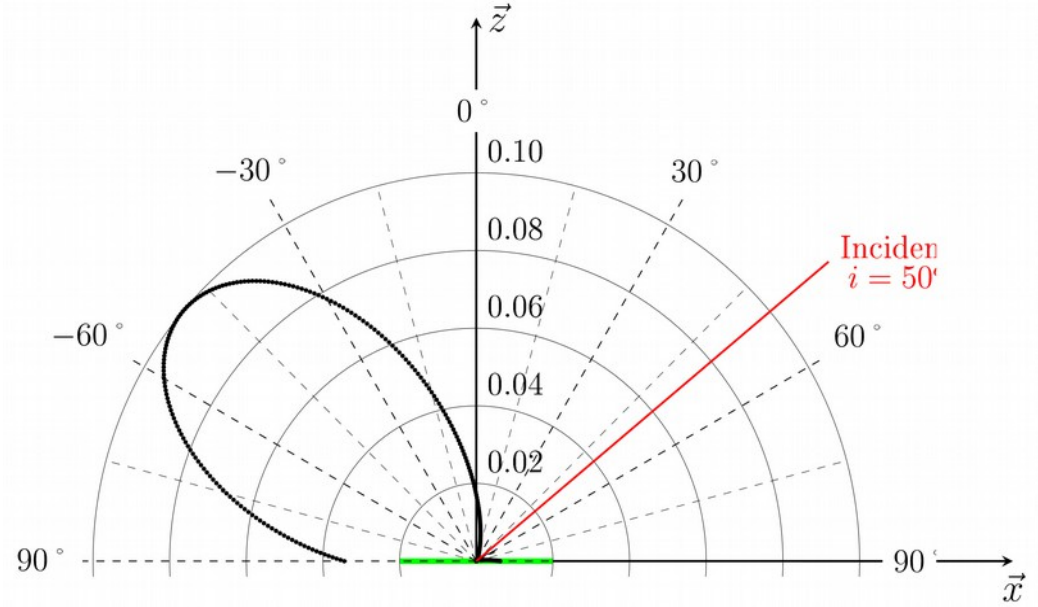

α
Emetteur
Recepteur

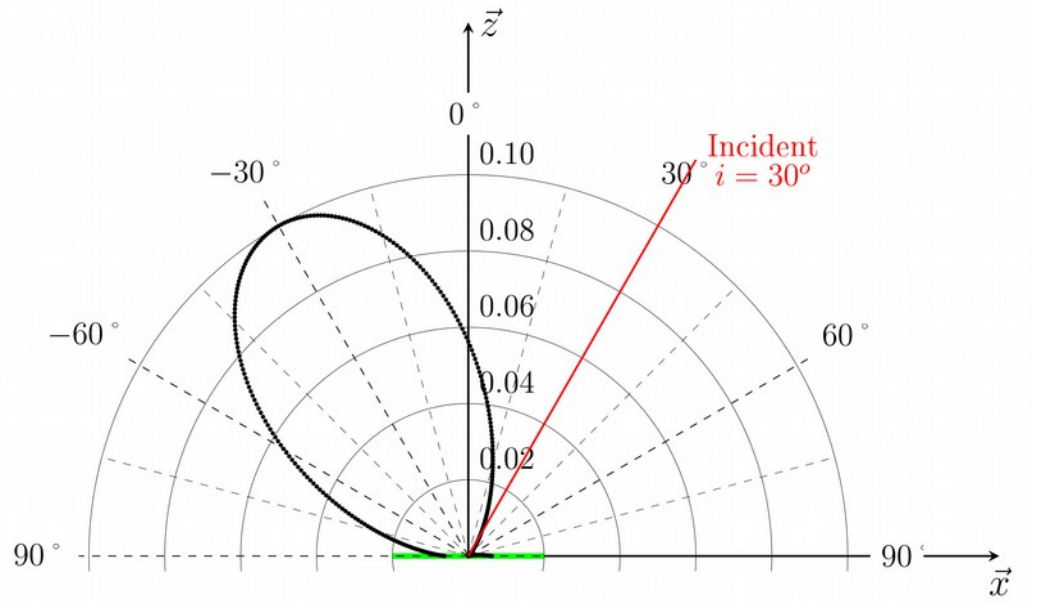

R
E

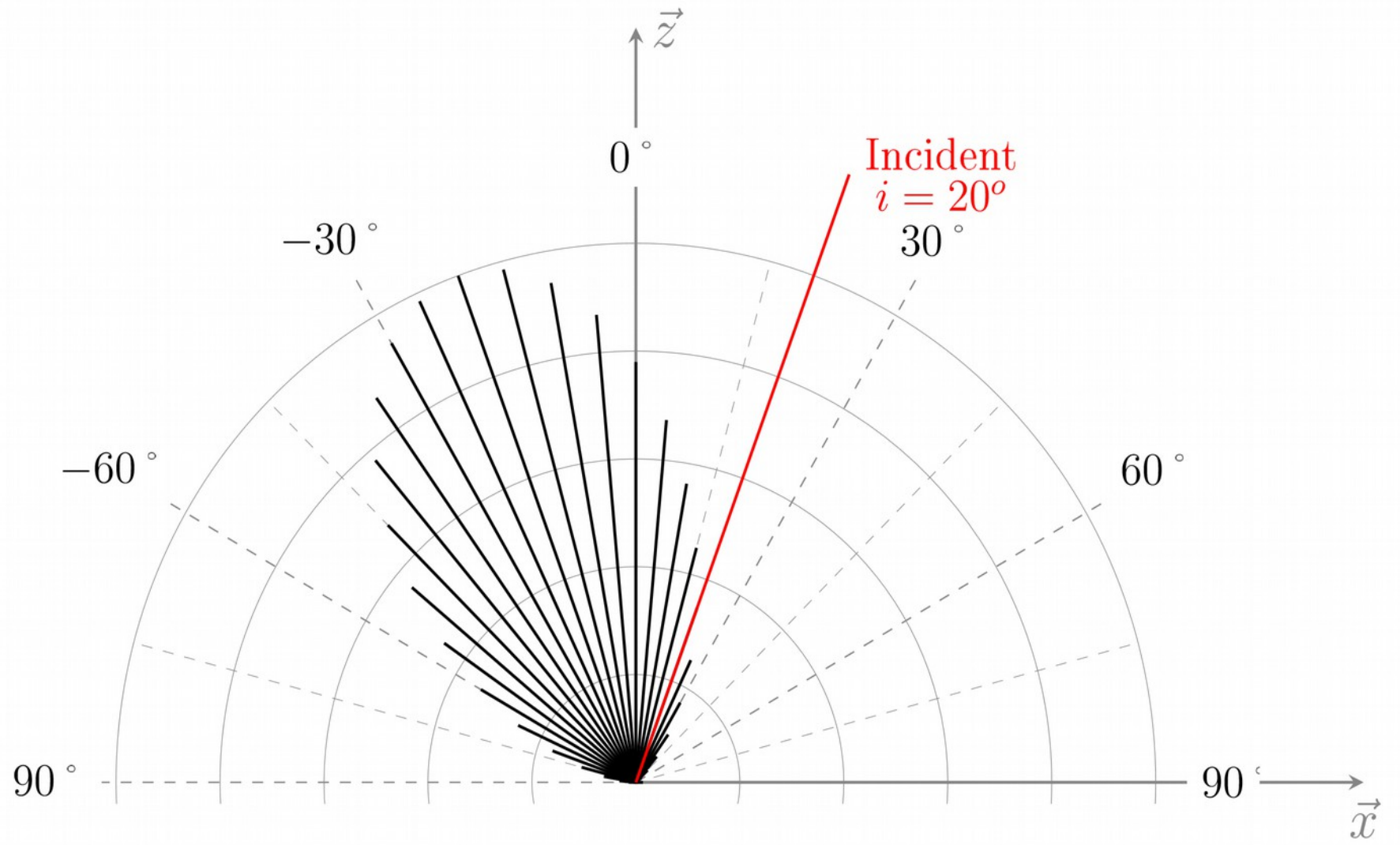
L'expérience et la modélisation

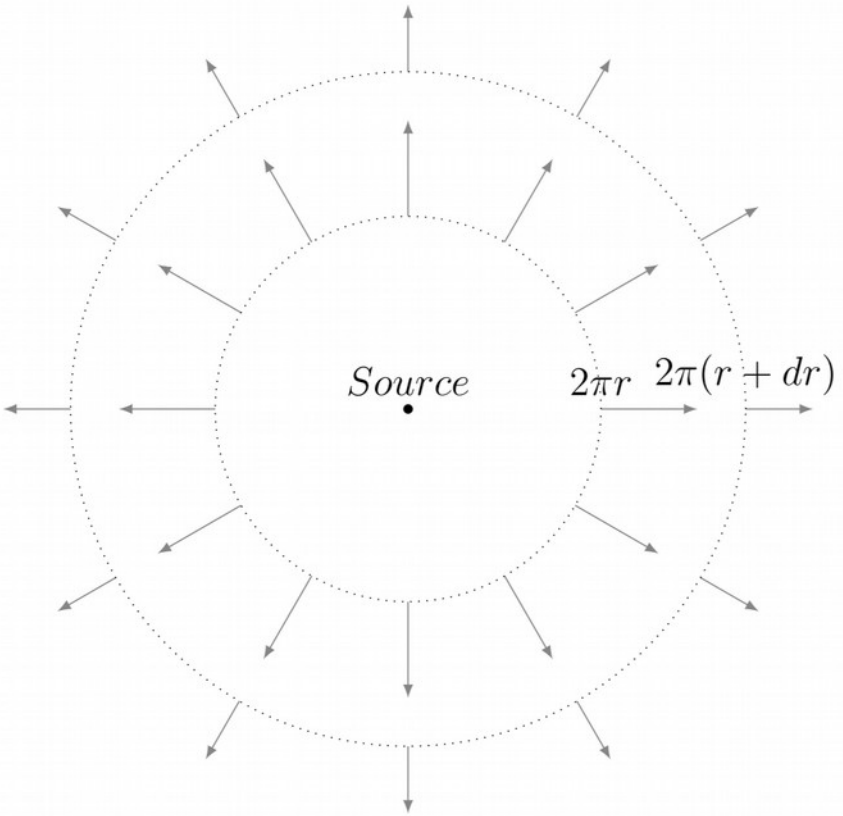









$\vec{z}$
0 °
Incident
$i = 20^o$
−30 °
30 °
−60 °
60 °
90 °
90 °
$\vec{x}$



Conservation de l'énergie

$$\frac{\partial \rho(r,\theta)}{\partial t} + div(\overrightarrow{\Pi}) = 0 \tag{2.1}$$

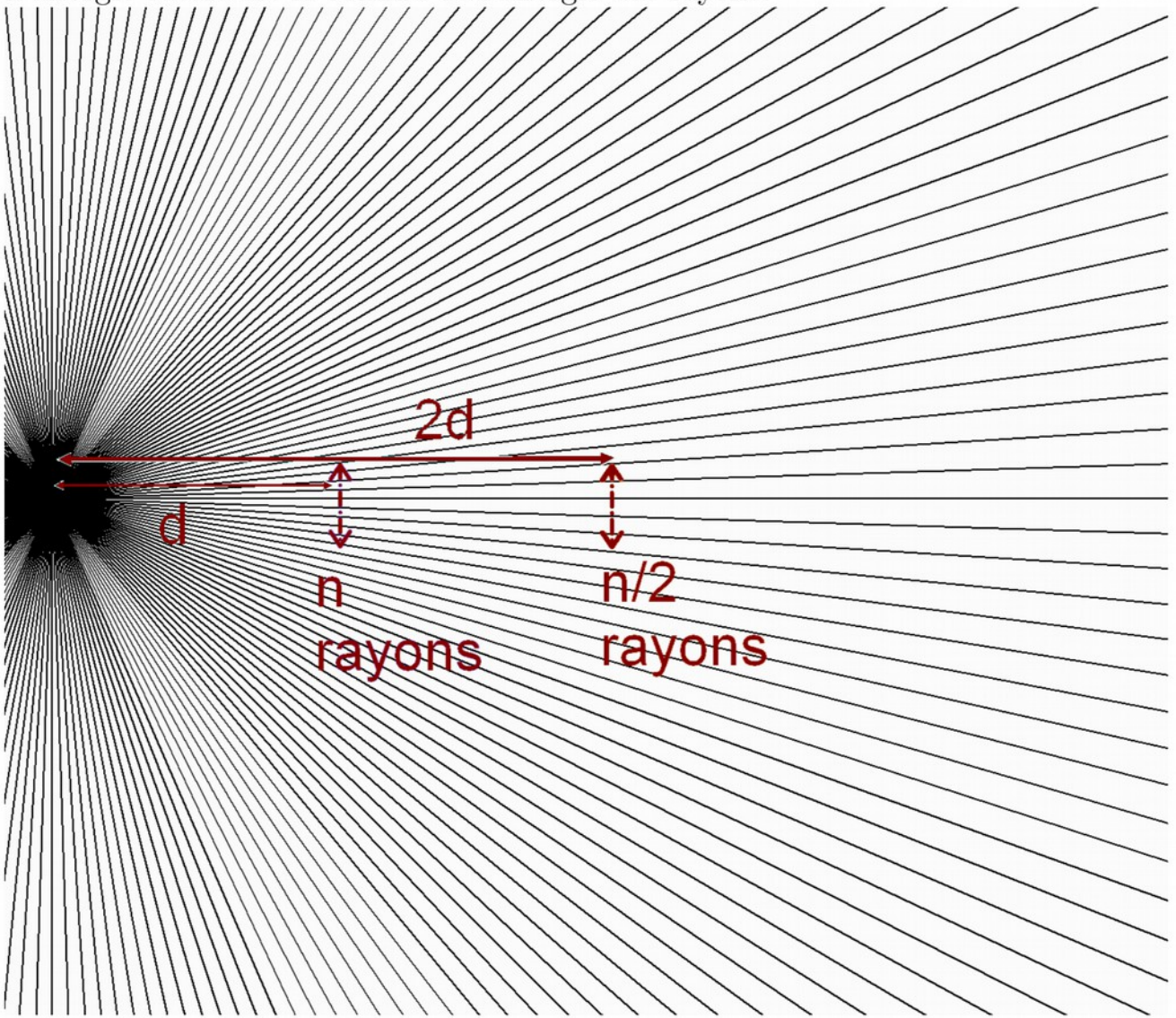
En supposant que l'énergie du milieu (l'air) est constante on a :

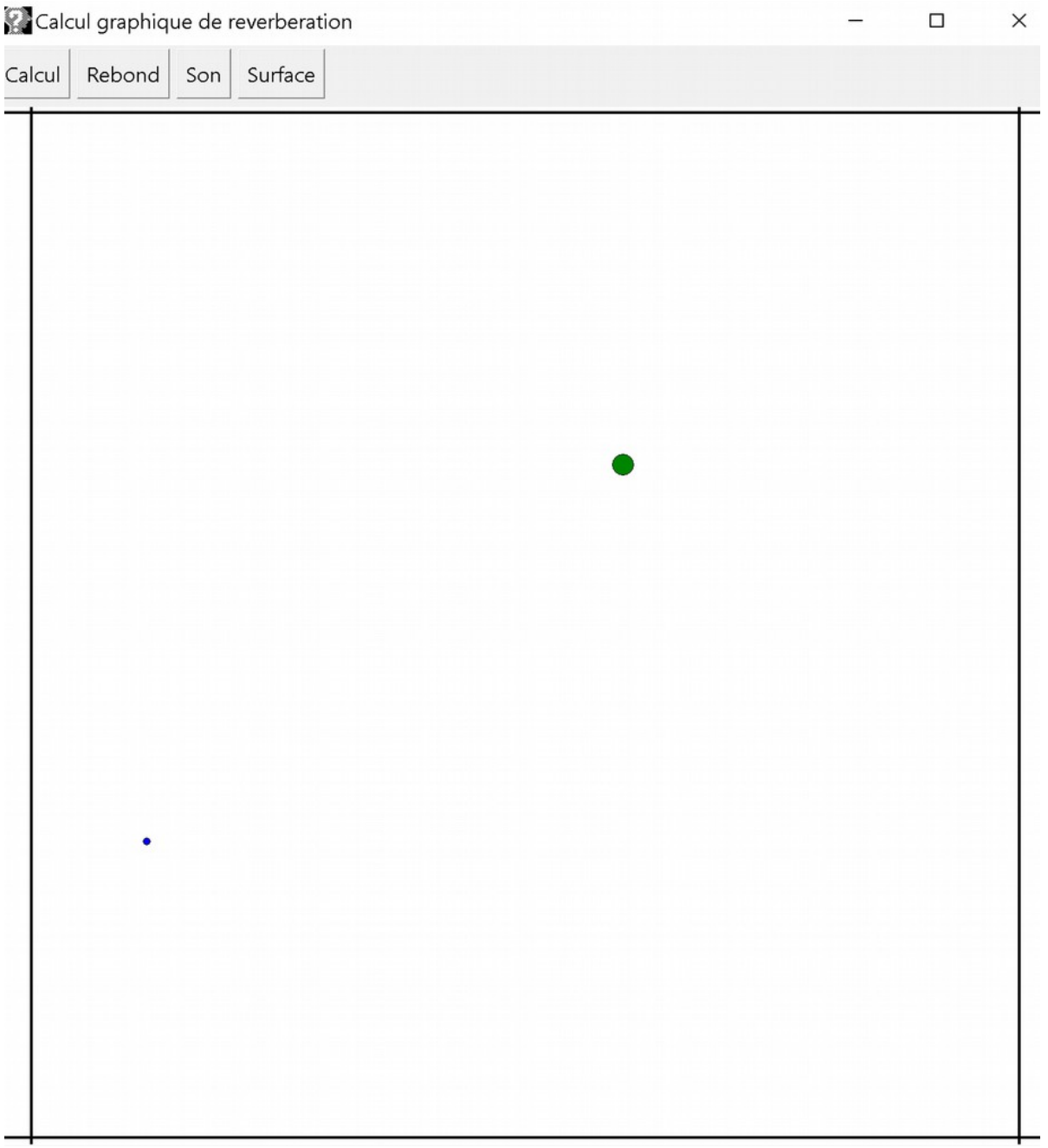
$$div\overrightarrow{\Pi} = 0 \tag{2.2}$$

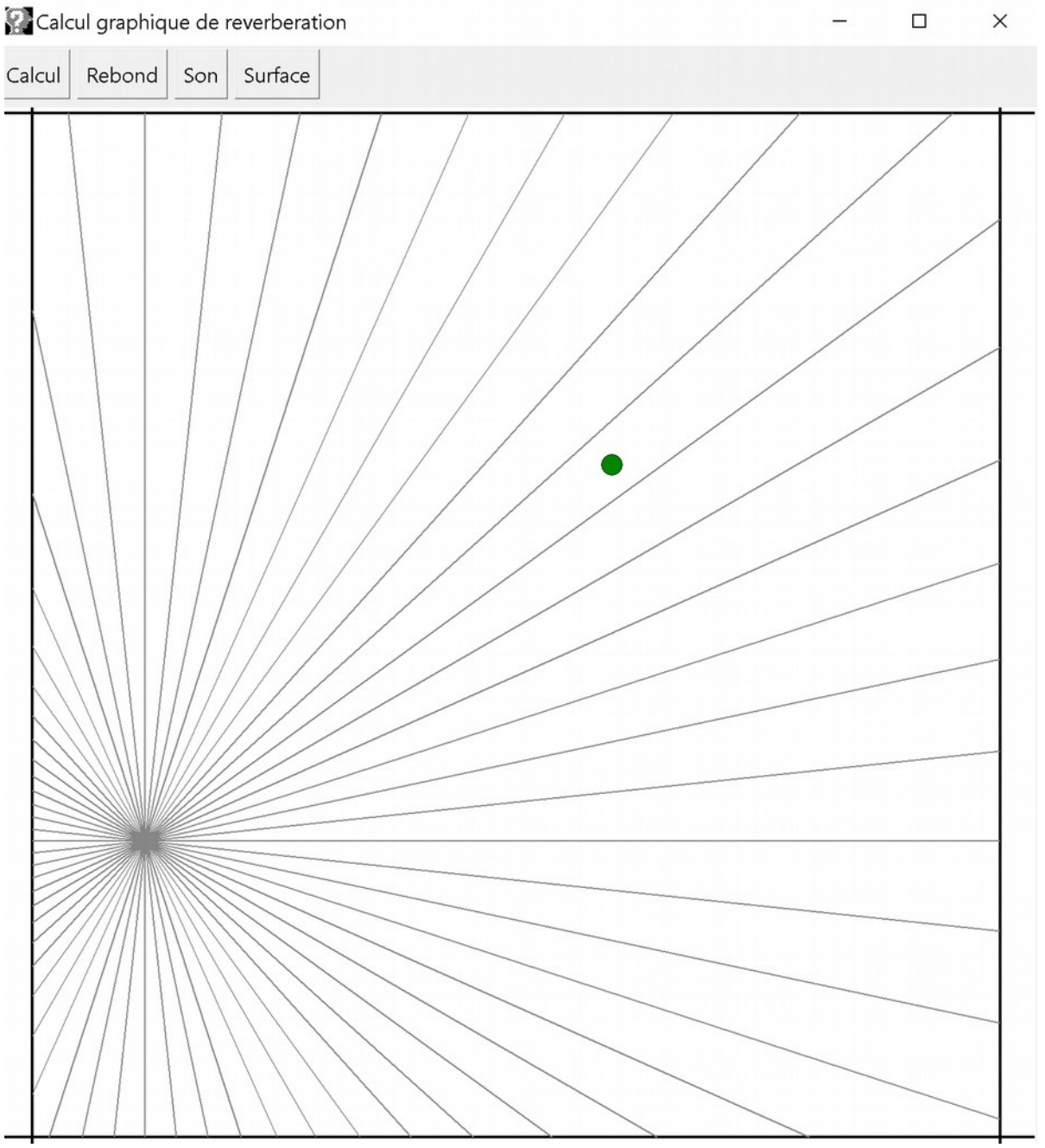
i.e. $\forall\theta$

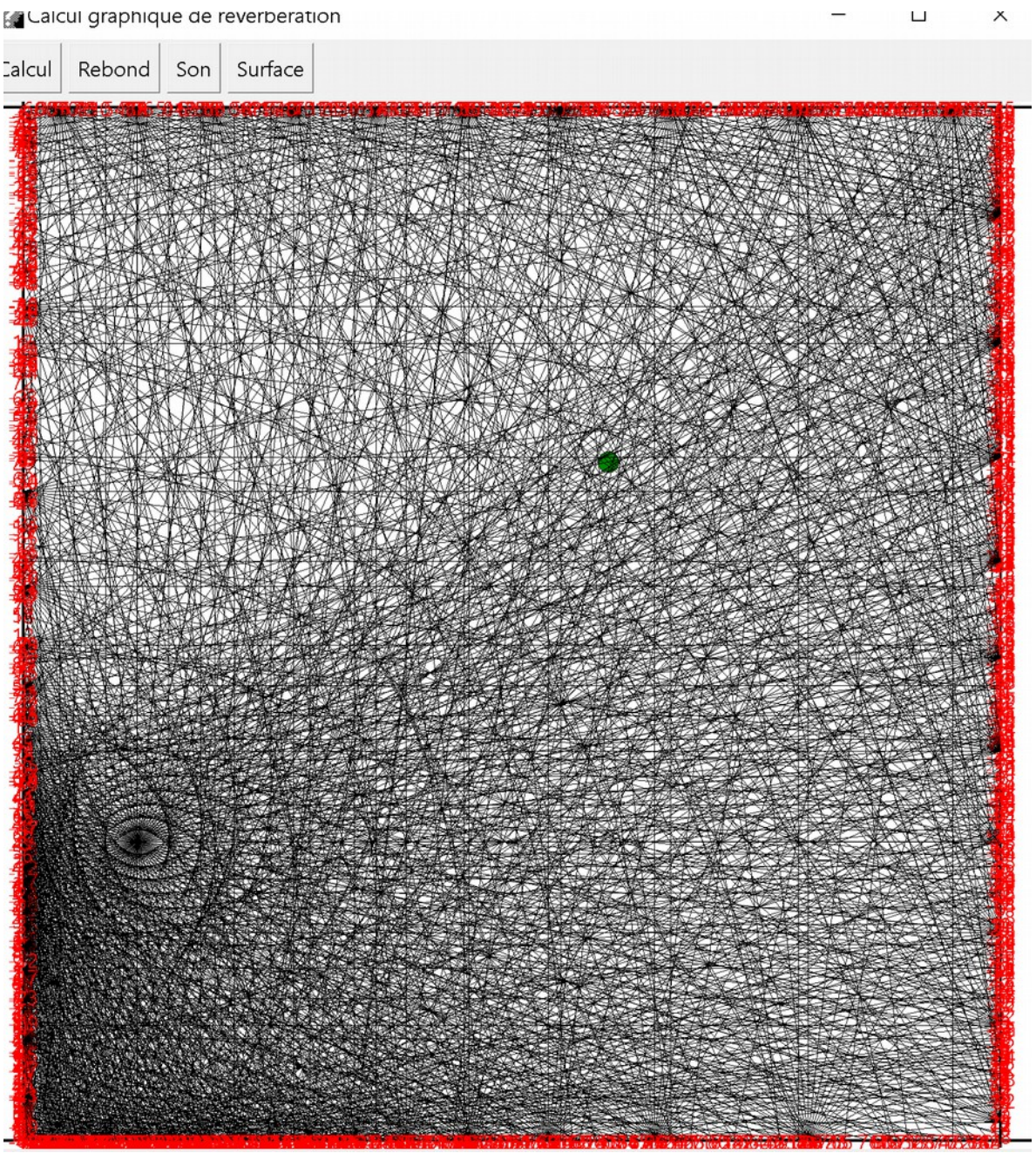
$$2\pi r\Pi(r) = Constante \tag{2.3}$$

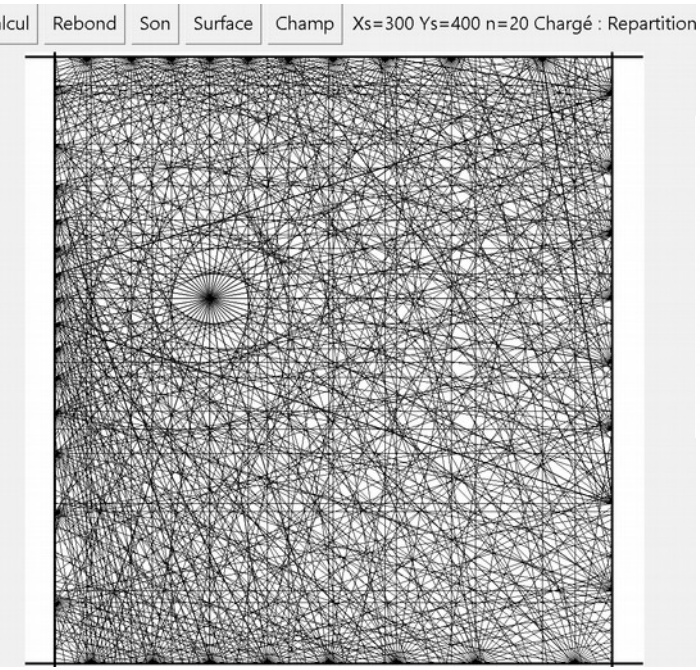
Donc $\Pi(r)$ % $\frac{1}{r}$
Ce que l'on vérifie aisément avec une simple constatation :
L'énergie totale est la somme de l'énergie des rayons.



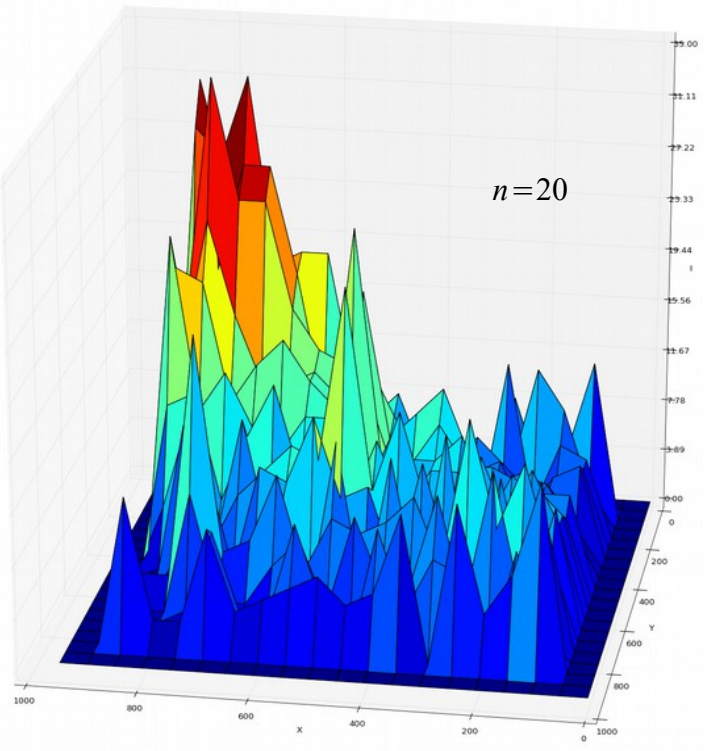

Calcul graphique de reverberation
Calcul
Rebond
Son
Surface

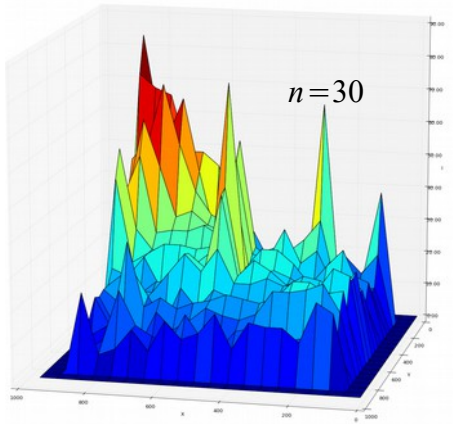

Calcul graphique de reverberation
Calcul
Rebond
Son
Surface

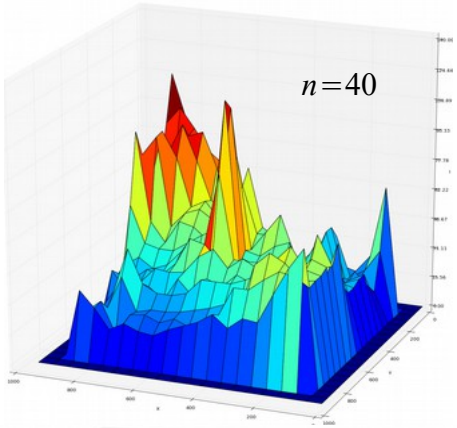

Calcul graphique de reverberation
Calcul
Rebond
Son
Surface

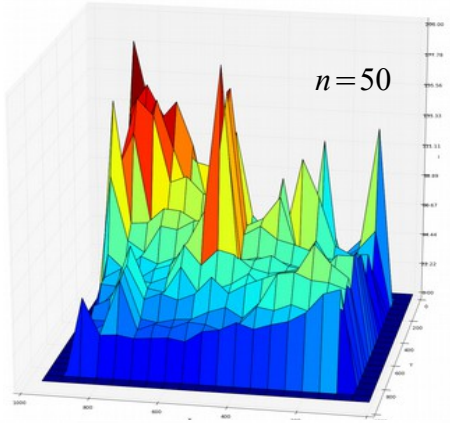


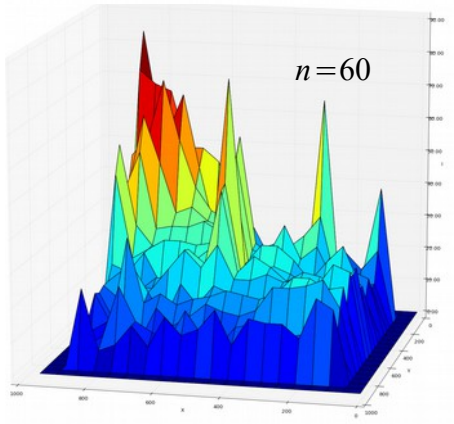
Convergence des résultats

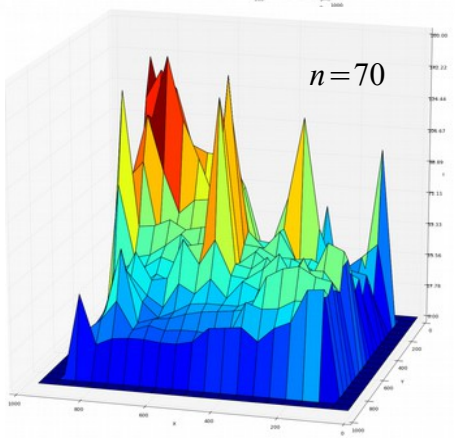


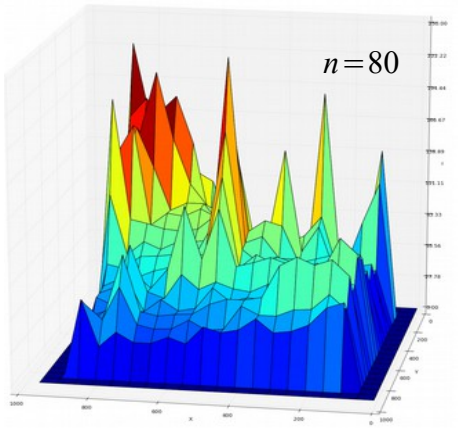


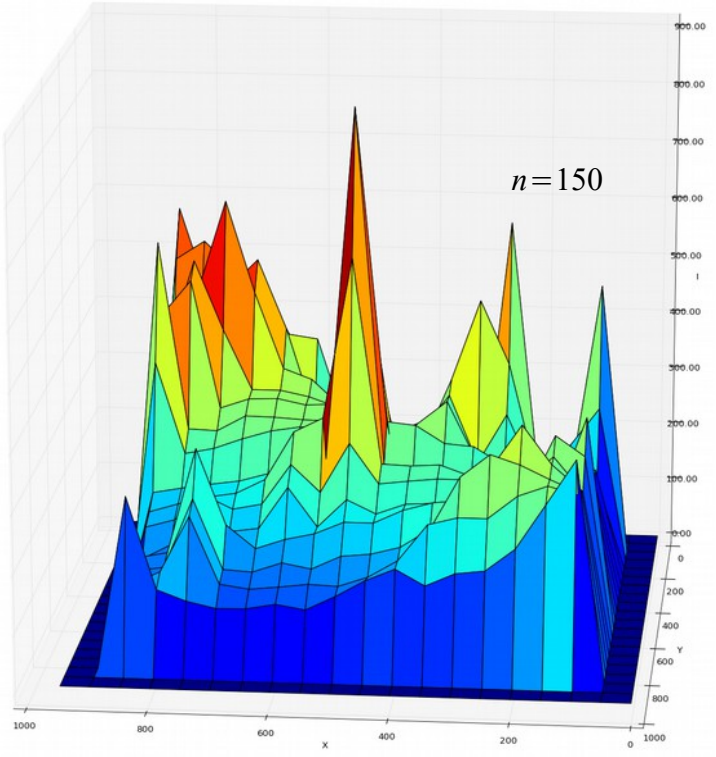




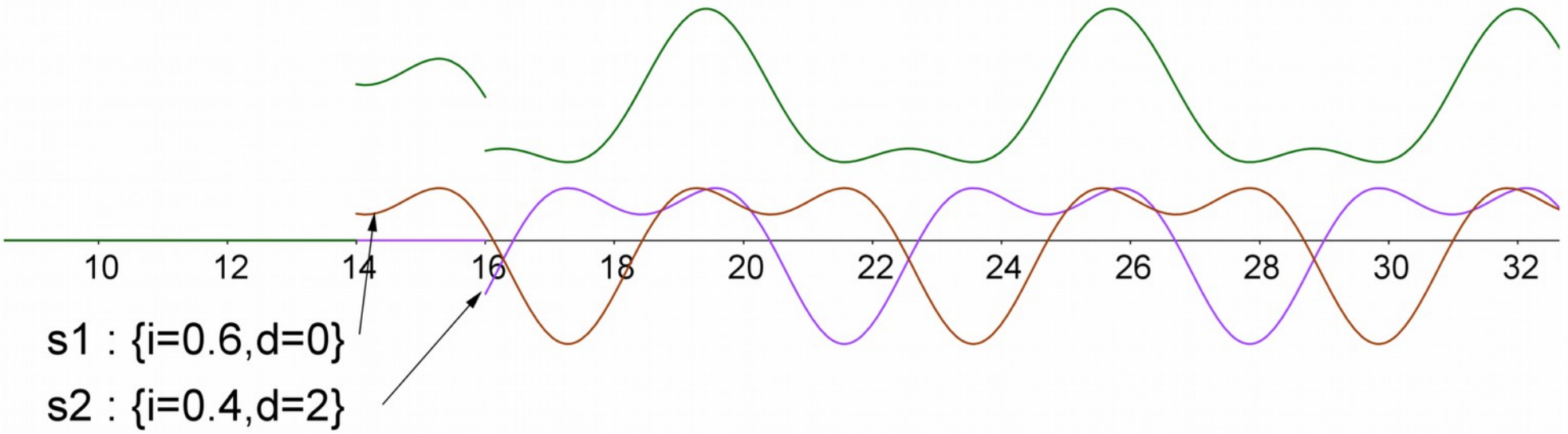








$$I_{tot} = I_{directe} + \sum_{\text{reflexions passant par M}} I_i$$



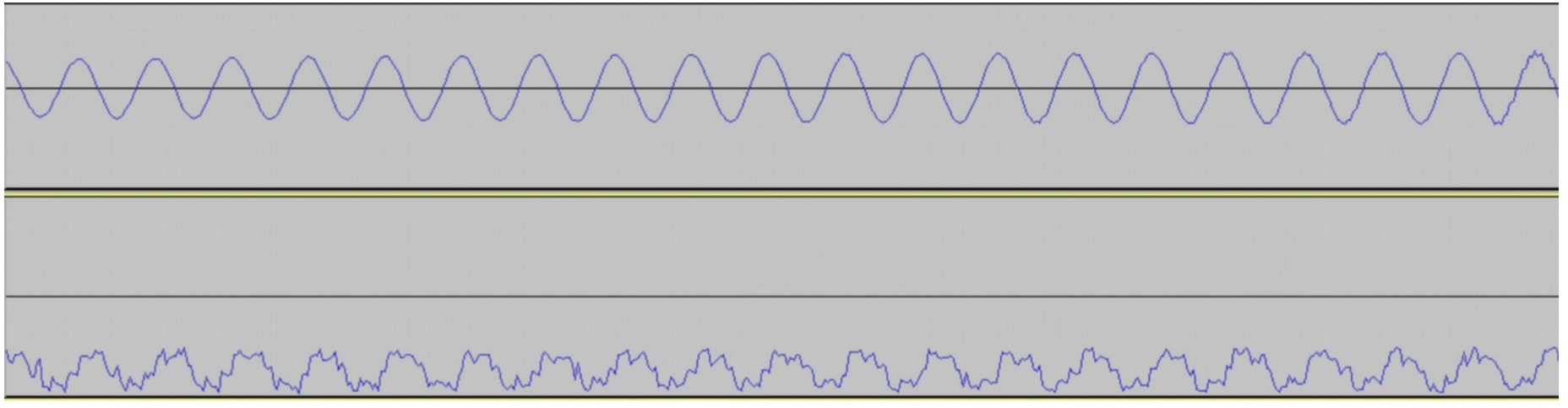


FIGURE 3.1 – Onde emise et transmise

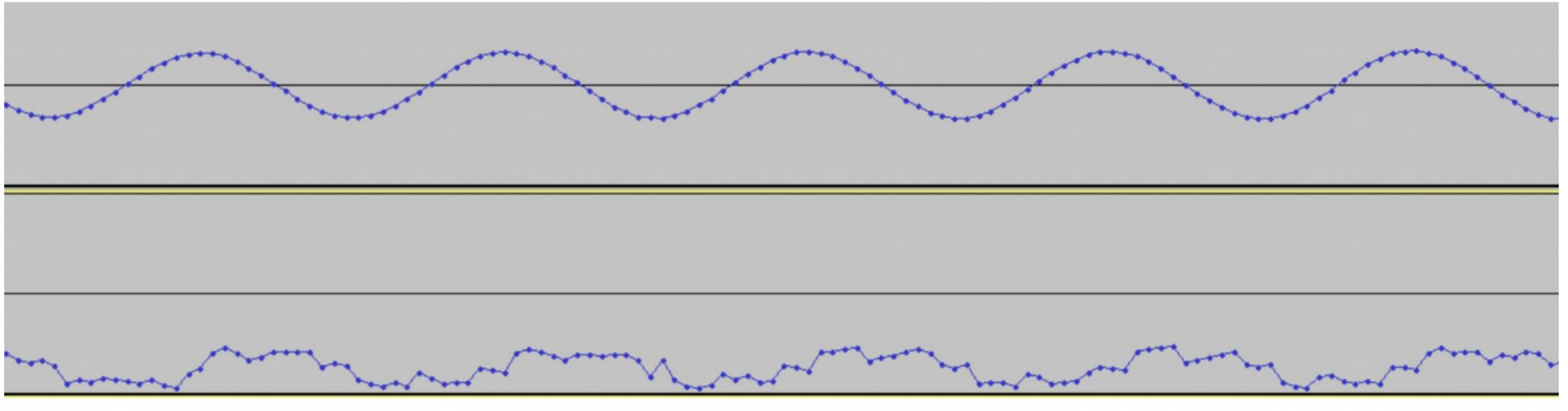
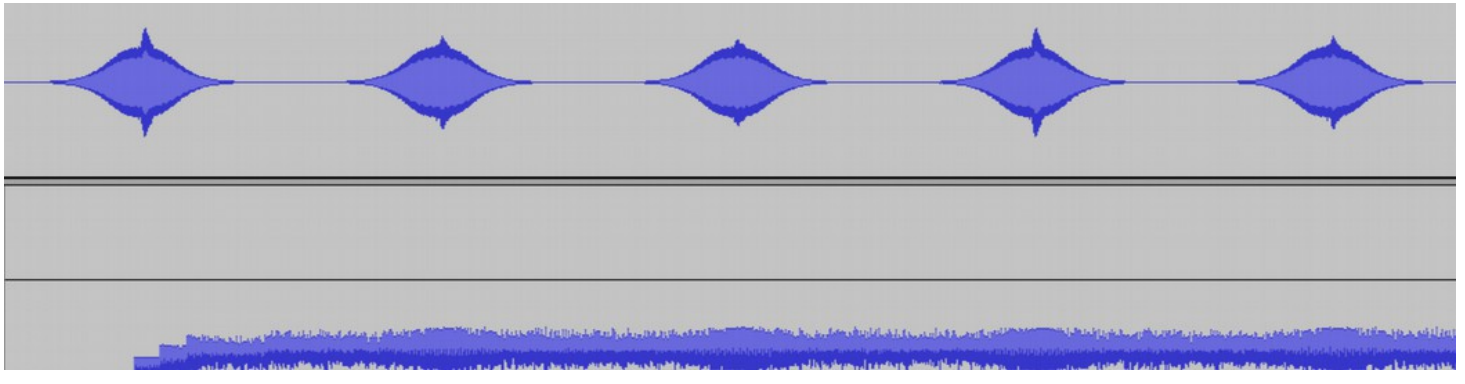
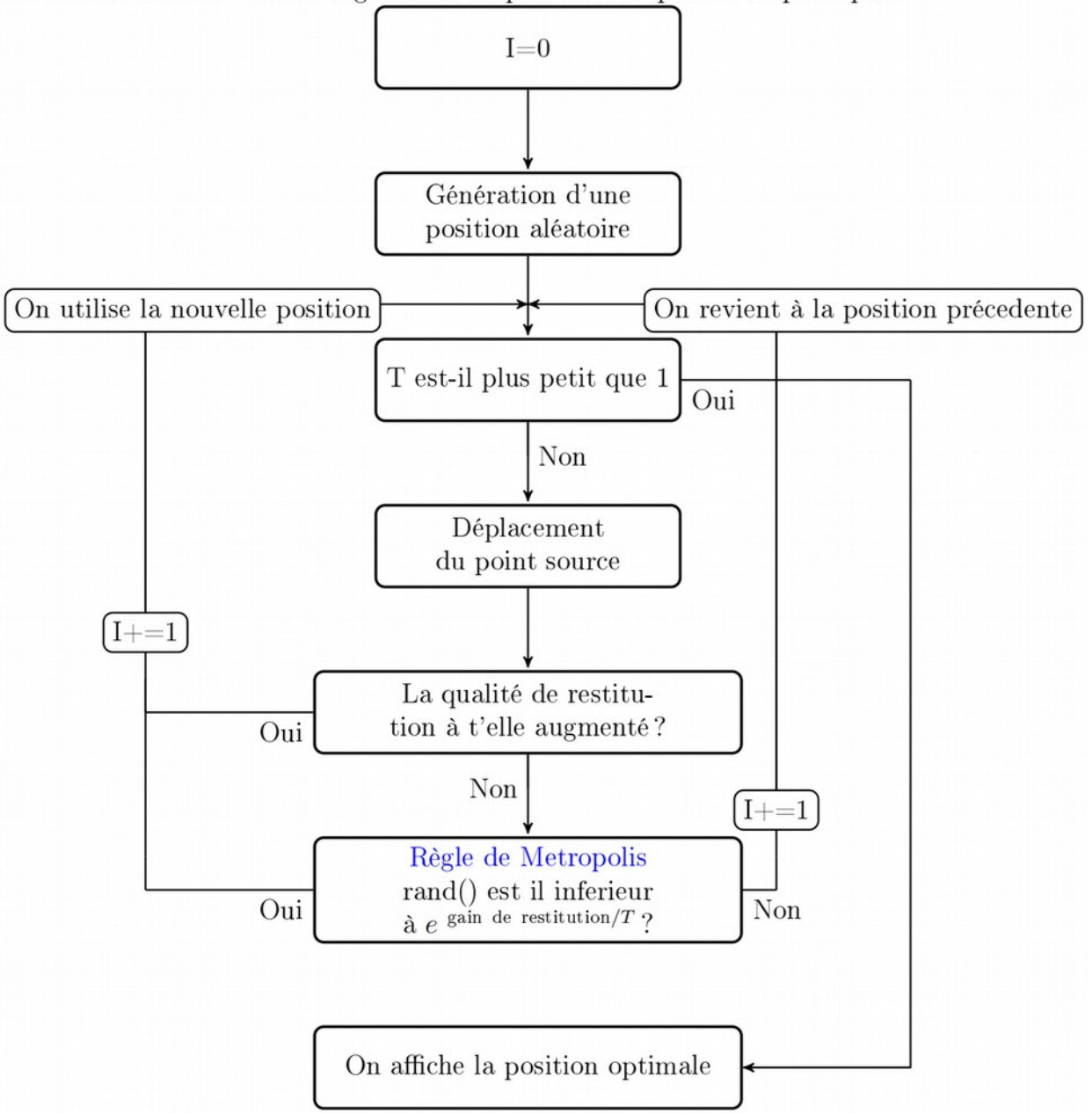


FIGURE 3.2 – Zoomé



Le recuit simulé est un algorithme d'optimisation qui suit ce principe :



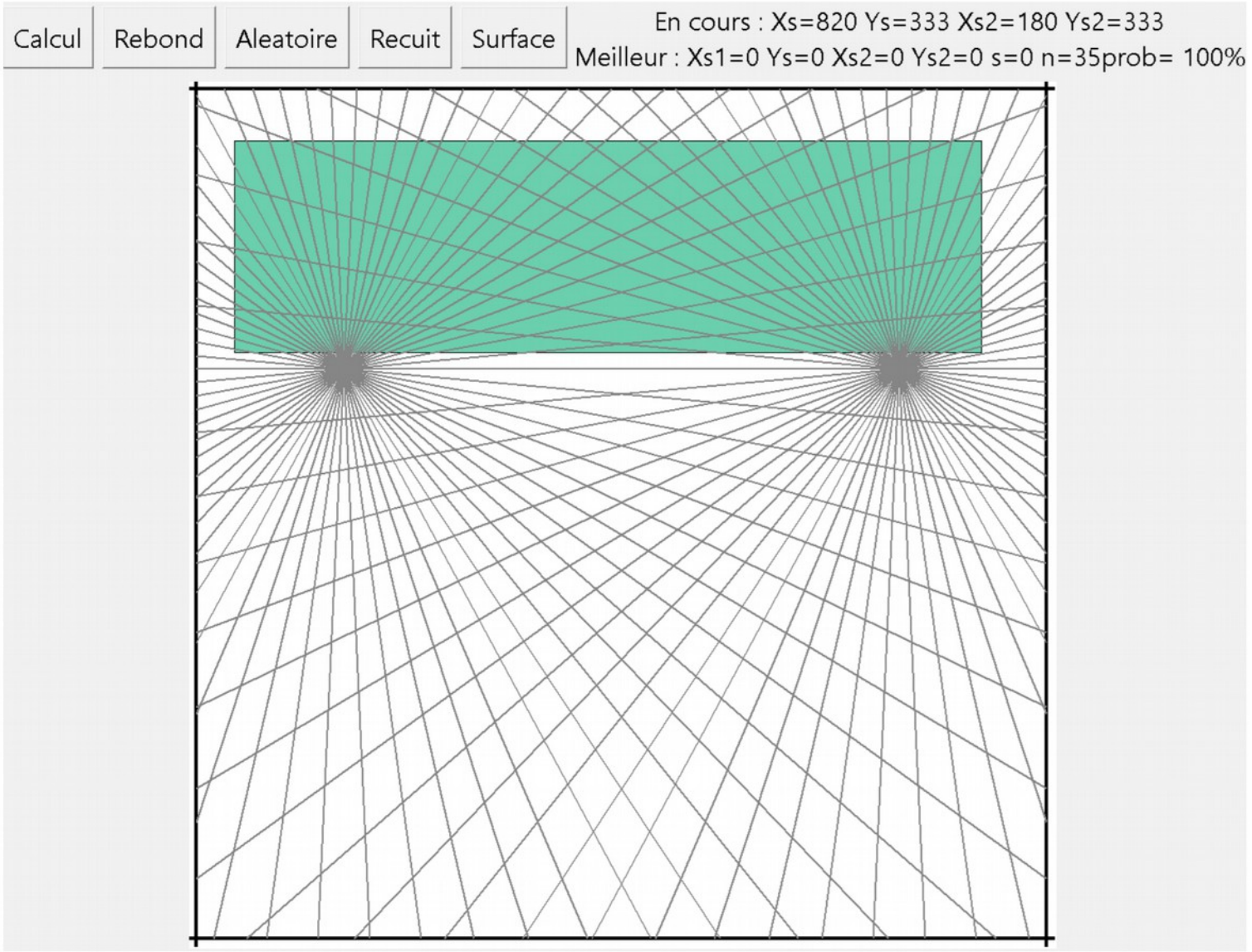


FIGURE 3.11 – Exemple de test par le recuit simulé
Public : (▬)

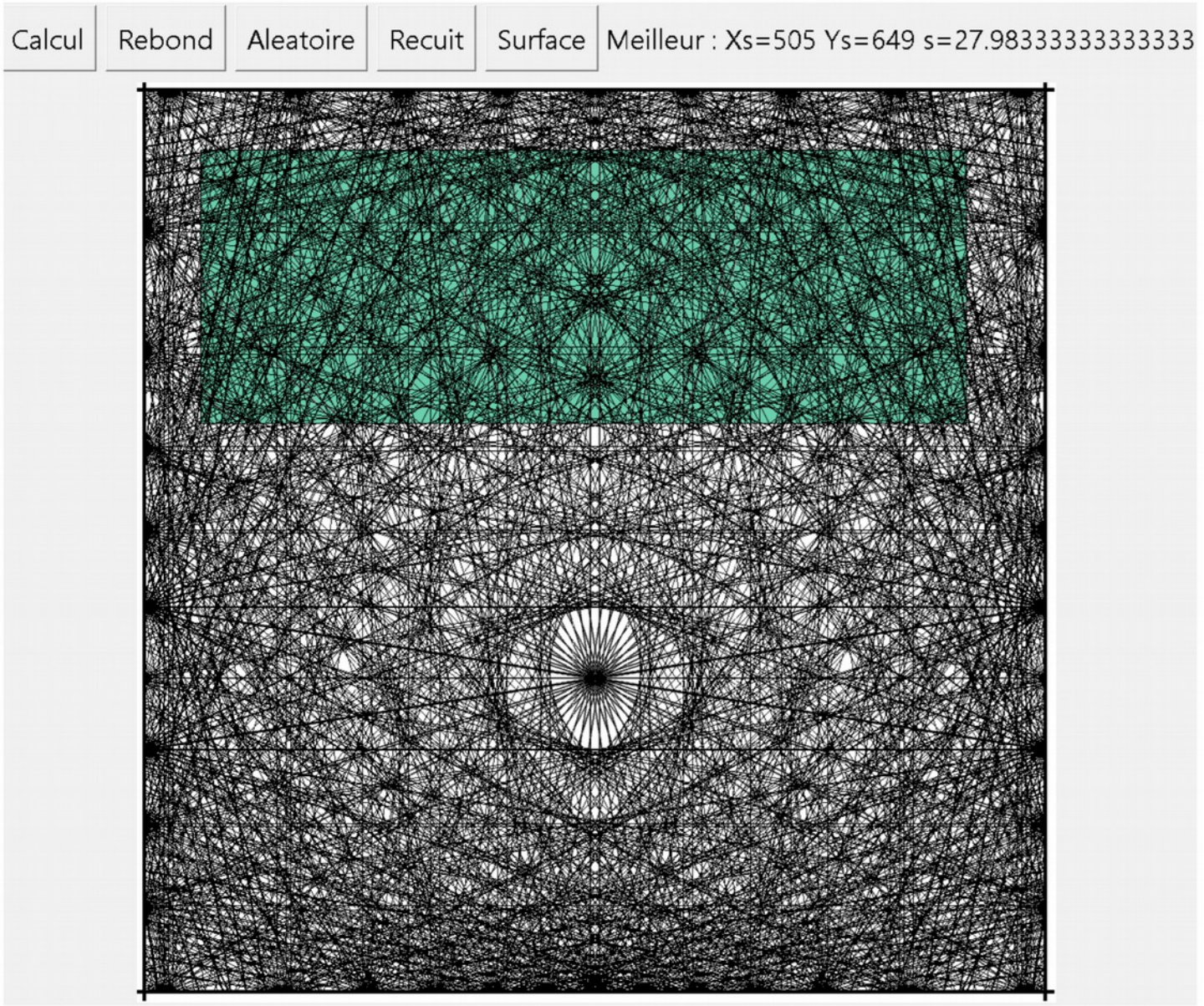


FIGURE 3.12 – Premier minimum

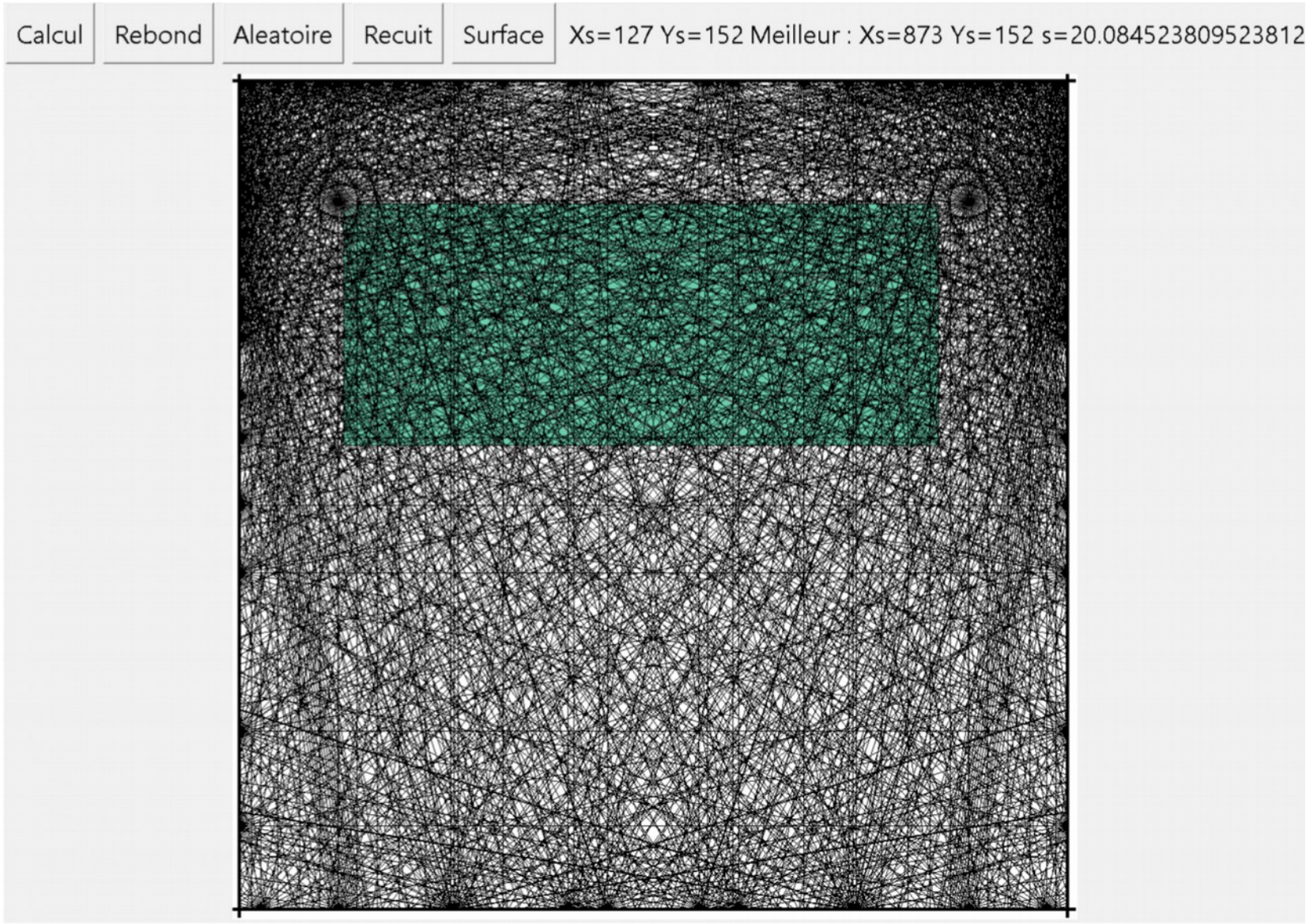


FIGURE 3.13 – Second minimum