



SI.CORP



FIBRA ÓPTICÁ

**Una propuesta por el
corporativo *Solitones*
*Implementados.***

Gilberto Rodríguez Prado A01635693

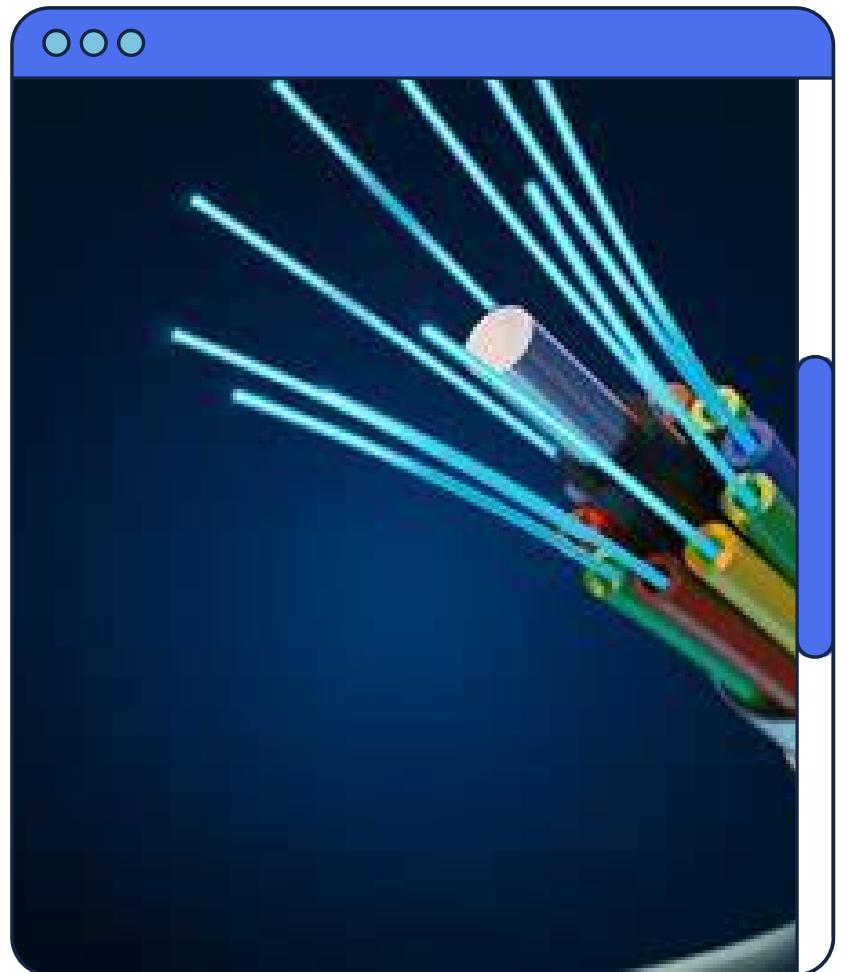
Oscar Cruz Zepeda A01639263

Franco Ortega Eduardo A01369383

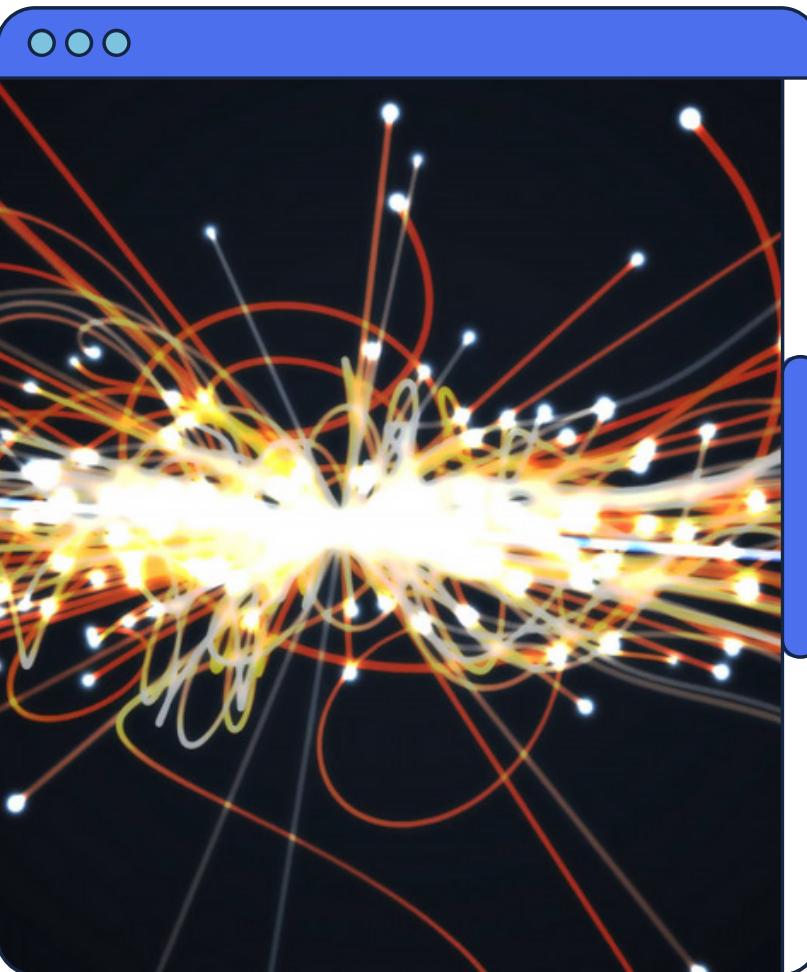
Arif Morán Velázquez/A01234442

Juan Francisco Hernández Rodríguez A01634228

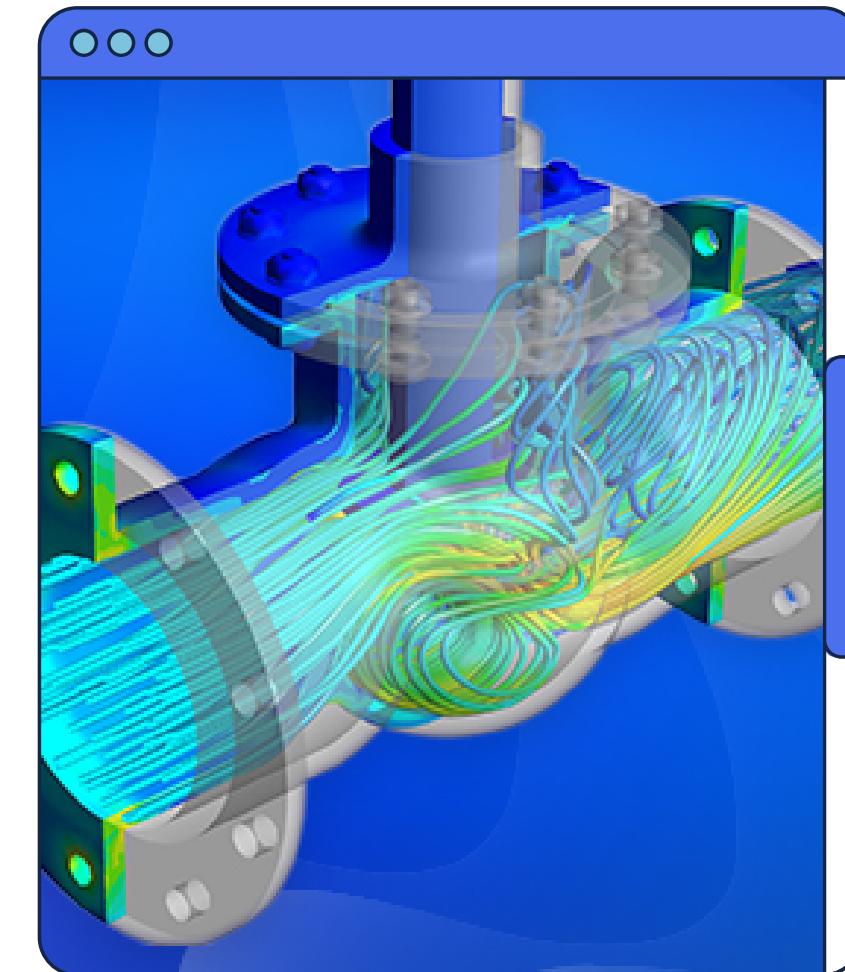
Solitones



Comunicaciones ópticas



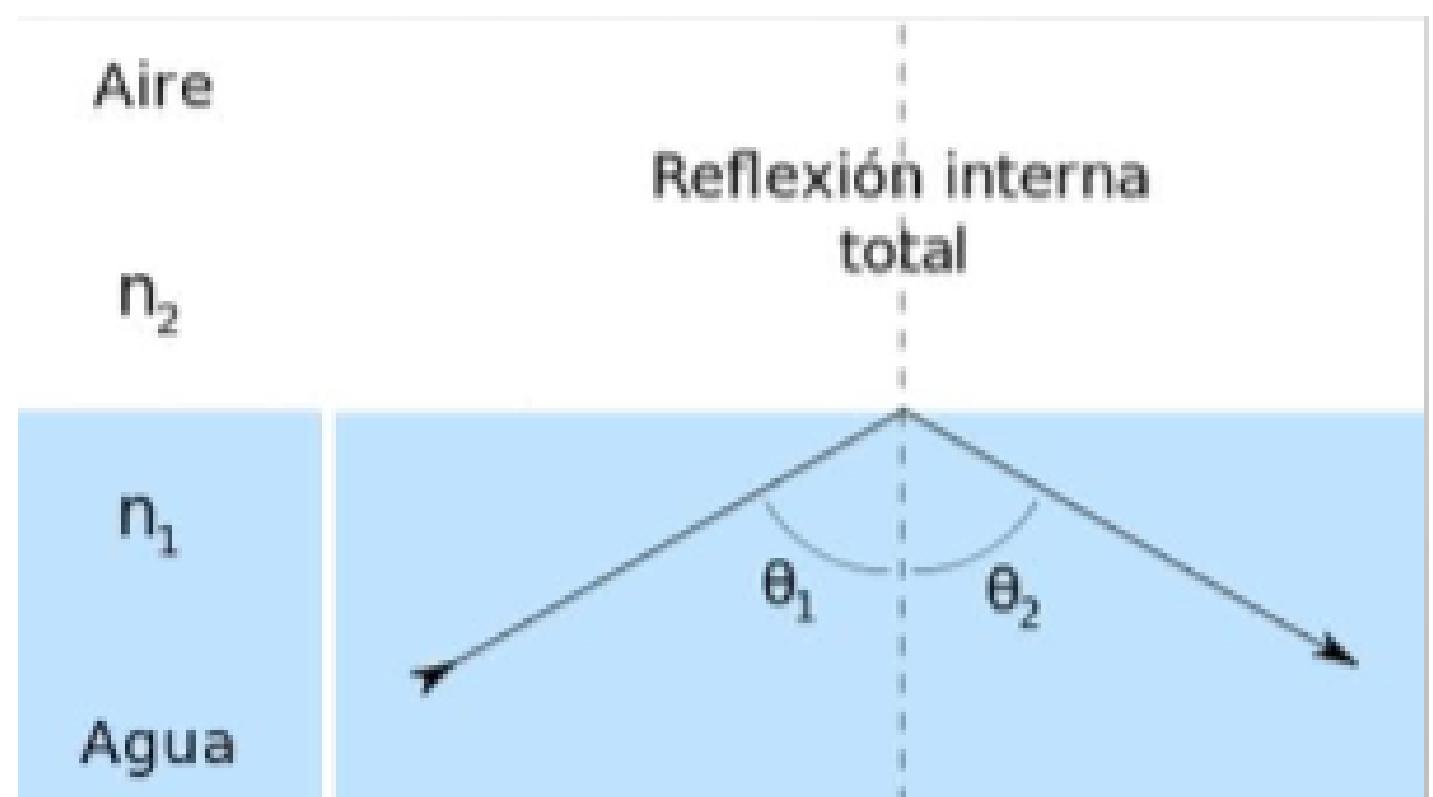
Física de partículas



Dinámica de fluidos

FIBRA OPTICA

CONECTANDO A RETOTEC® CON
EL MUNDO.





CLIENTES

*LA IGUALDAD ES COMO LA GRAVEDAD,
UNA NECESIDAD. (JOSS WHEDON)*

- Servidores
- Sector urbano
- Empresas
- Institutos
- Sectores publicos



IMPACTO

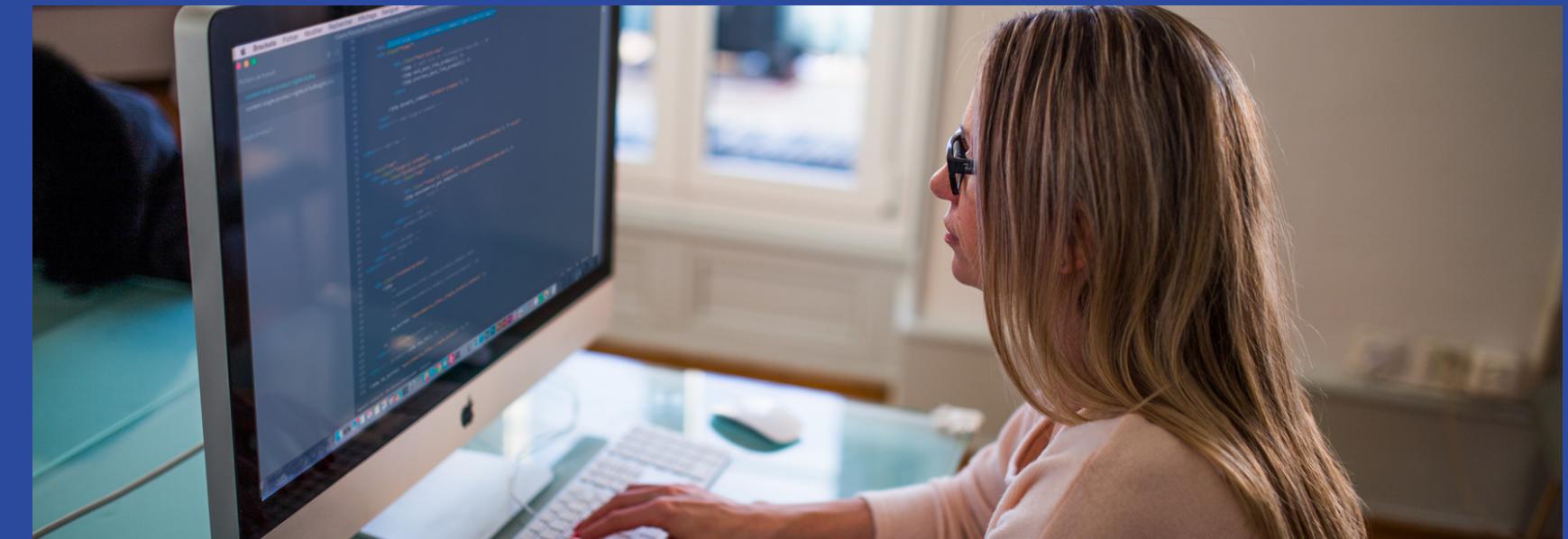
SUSTENTABLE

Optimizar un sistema haciendolo mas barato reduce el impacto ambiental por explotacion de recursos



SOCIAL

Optimizar las señales, puede hacer que las interacciones sean mas directas y pueden darse mas fenómenos sociales, por ejemplo en la medicina



1

RELACION ENTRE LOS PARAMETROS AN Y WN.

¿CÓMO SE CONECTA LA AMPLITUD
MÁXIMA DEL PULSO CON LA
ANCHURA DE DICHO PULSO?



Variables

1

AMPLITUD MÁXIMA

Dicta en cada pulso el valor máximo alcanzado.

2

ANCHURA DEL PULSO

Dicta la anchura del pulso

3

SU RELACIÓN

Resolviendo con la potencia del pulso, se calcula que la amplitud máxima es inversamente proporcional a la anchura del pulso

$$\begin{aligned}P &= \int_{-\infty}^{\infty} \left| A \operatorname{sech}\left(\frac{t}{W}\right) \right|^2 dt \quad u = \frac{t}{W} du = \frac{t}{w} dt \\&= A^2 W \int_{-\infty}^{\infty} \operatorname{sech}^2(u) du \\&= A^2 W \lim_{a \rightarrow -\infty} \lim_{b \rightarrow \infty} \tanh(u) \Big|_a^b \\&= A^2 W (1 - (-1)) \\P &= 2A^2 W \\2A^2 W &= 2A^3 W^2 \\1 &= AW \\A &= \frac{1}{W}\end{aligned}$$

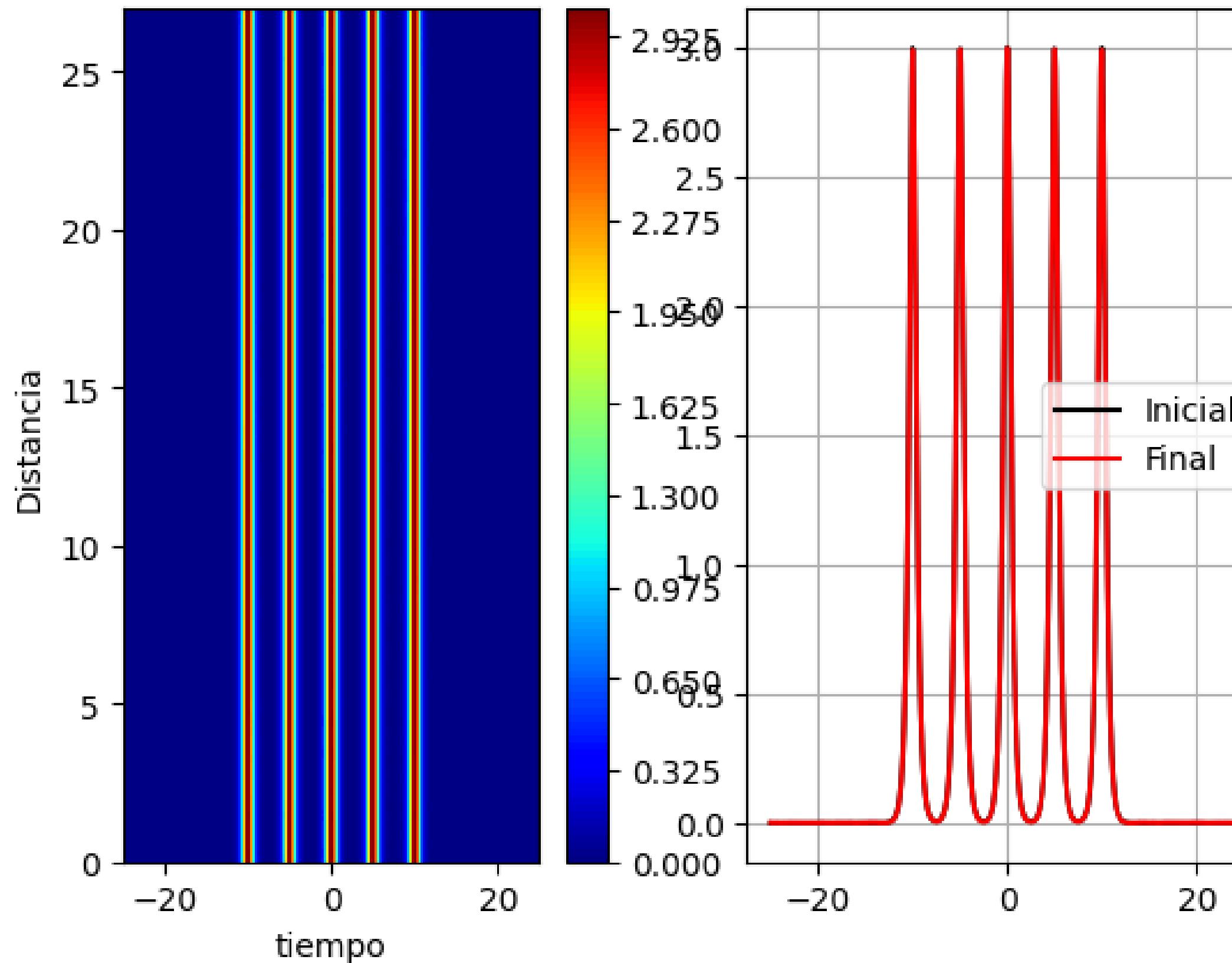
2

AJUSTE DEL PARAMETRO Q Y MAXIMIZACION DE B.

SI.CORP(2023)
NETWORK SOLUTION SERVICE

Para el envío de datos es necesario el escoger la potencia del pulso.Al quererse transmitir información se requiere de reducir la distancia temporal entre pulsos.

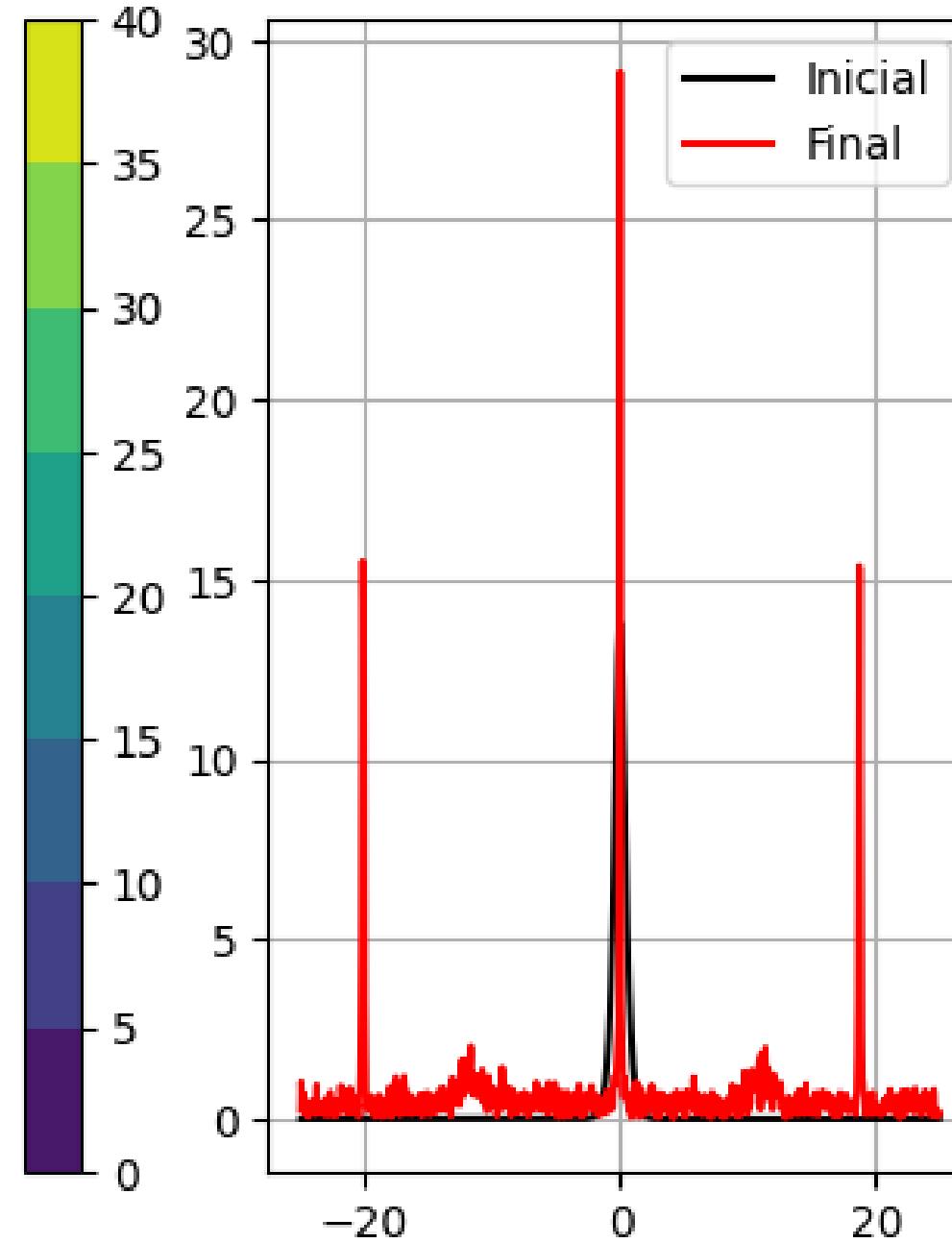
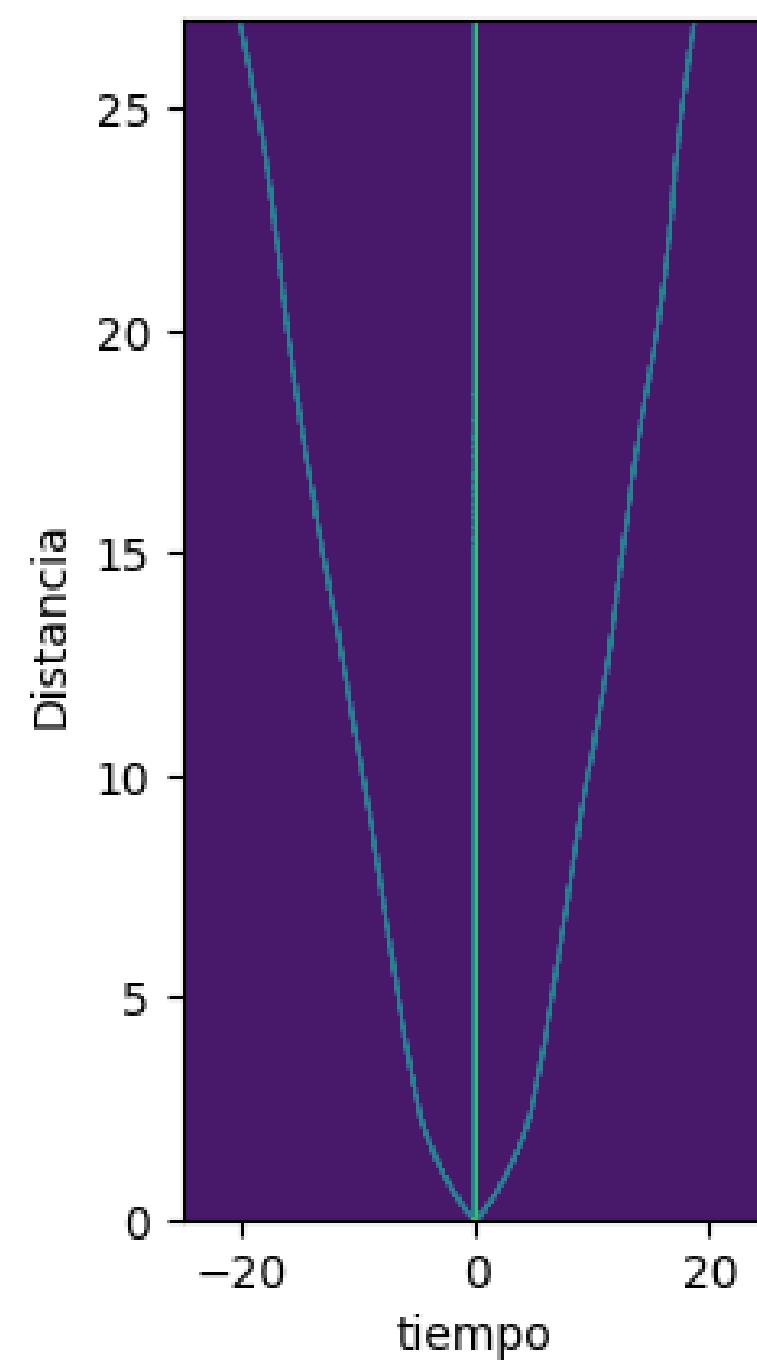
No podemos simplemente variar los parámetros a nuestro gusto



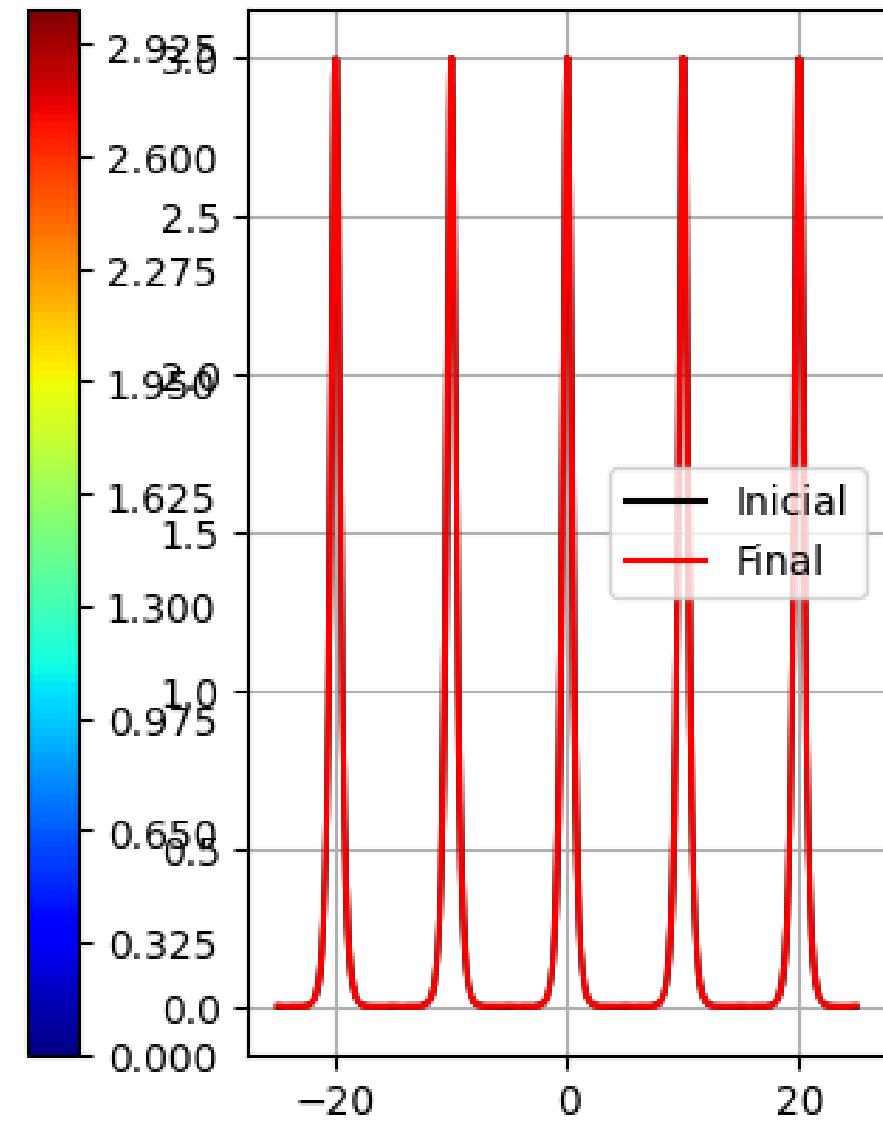
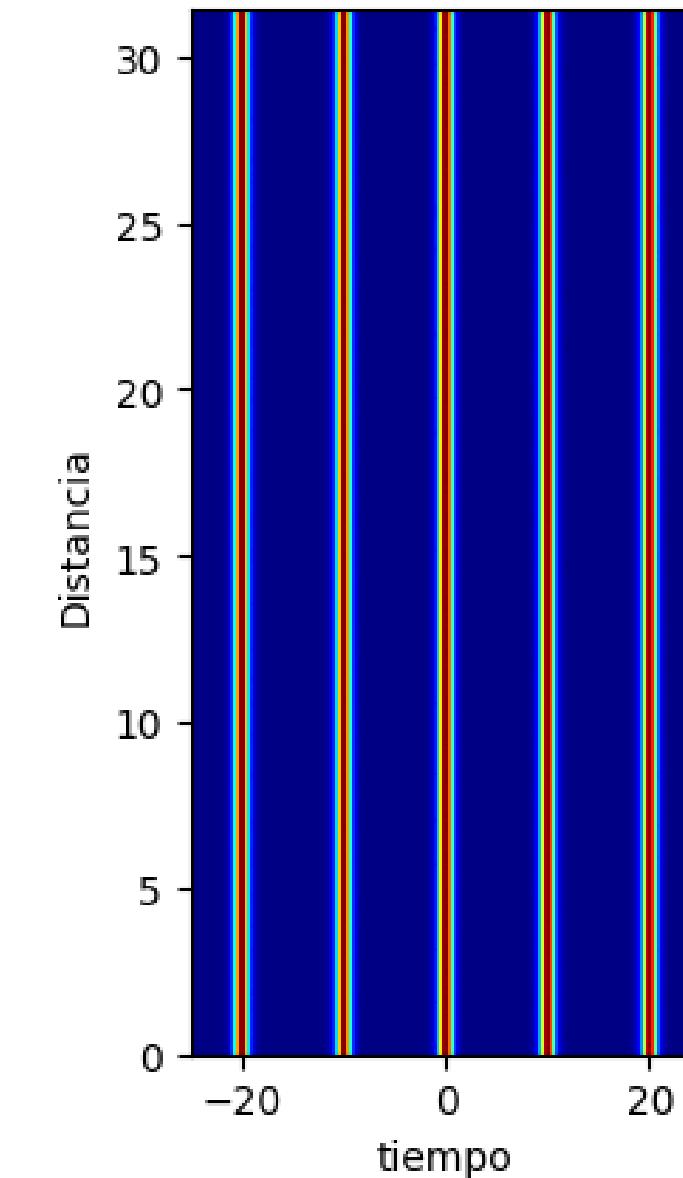
$$U^2 = 5 \text{ mW}$$

$$B = 20 \frac{Gb}{s}$$

$A=3$
 $dT=5 \text{ ##q0s}$



A=3
dT=0.1 ##qθs



$$B = \frac{1}{qT_0}$$

$$B > 20Gb/s$$

$$\frac{1}{qT_0} > 20Gb/s \therefore \frac{1}{20Gb/sT_0} > q$$

$$T_0 = 10ps$$

$$0 < q < 0.005 \frac{s}{Gbps} * \frac{1e^{12} ps}{1s} * \frac{1Gb}{1e^9 Byte}$$

$$0 < q < 5$$

$$A^2 = \gamma L d U^2$$

$$\gamma=4.5W^{-1}/Km$$

$$U=\sqrt{\frac{A^2}{\gamma L d}}$$

$$U^2 \leq 5 m W$$

$$5 \geq \frac{A^2}{\gamma L d}$$

$$0 < A \leq 3$$

MÉTRICA DEL ERROR

tolerancia = 0.1

Vector picos del pulso

Indice de picos

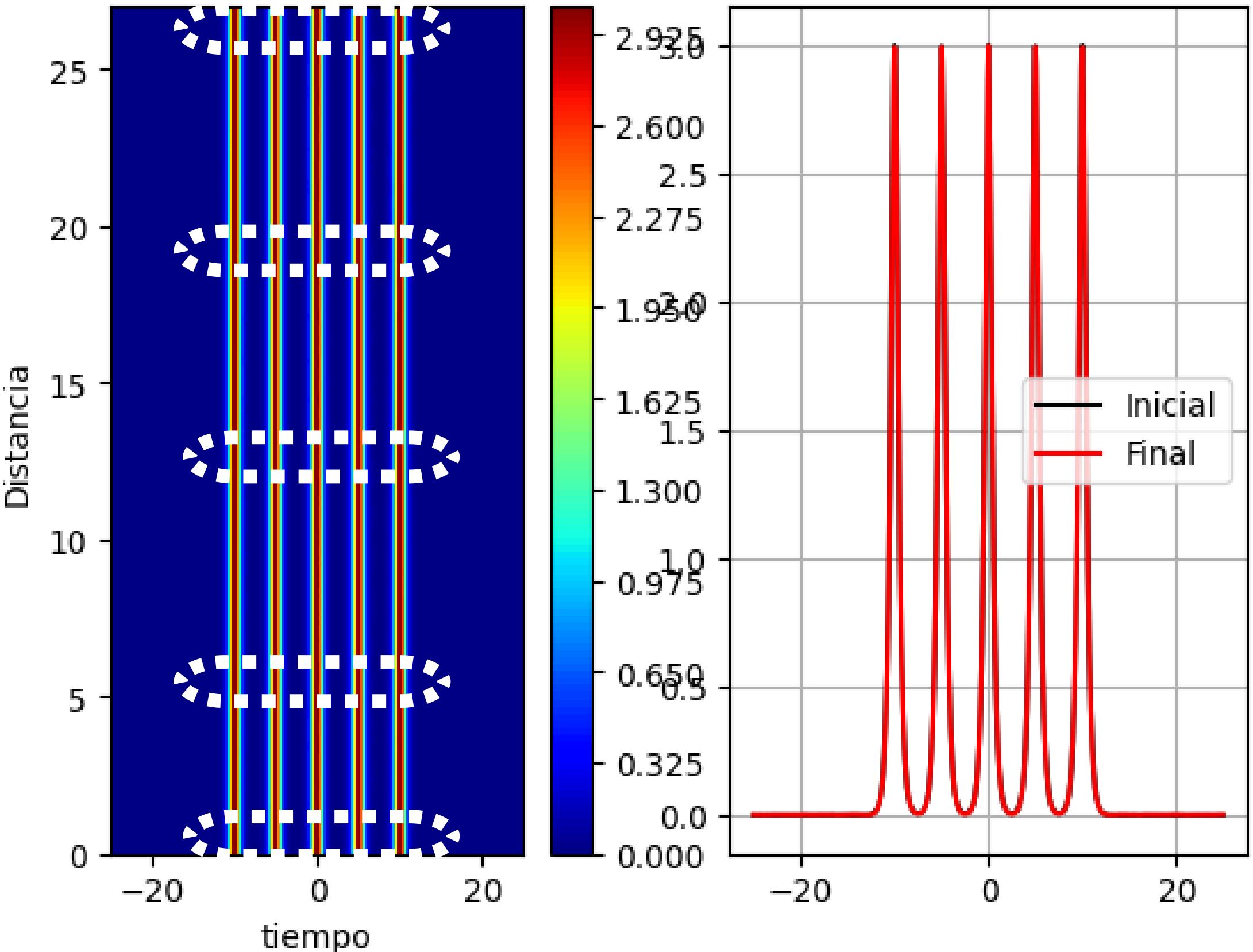
|Amplitud -|vector de picos||

promedio de los 5 pulsos

Promedio de los diferentes
puntos

Promedio de los diferentes
puntos

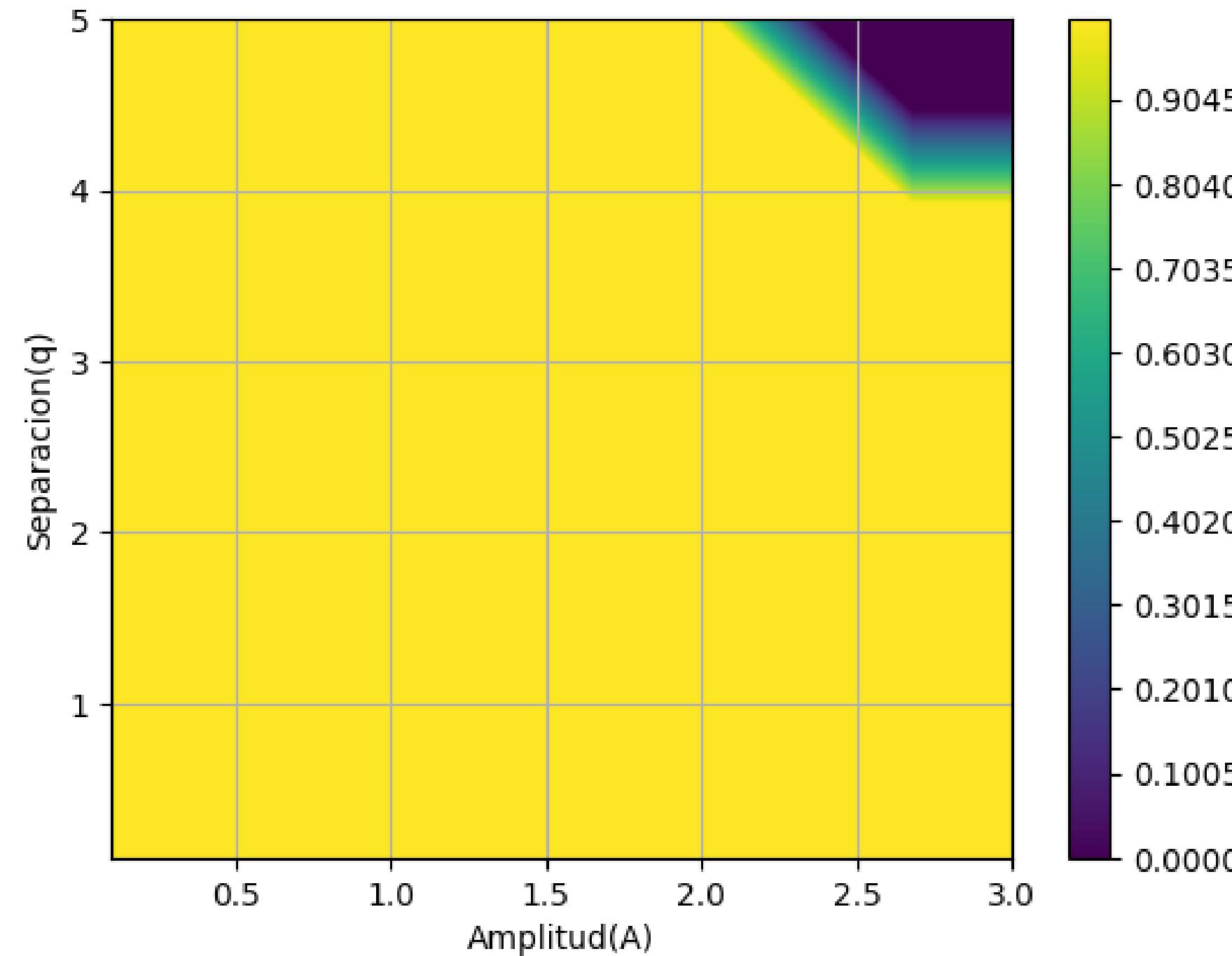
Tolerancia ≥ Error



OPTIMIZACIÓN DE VELOCIDAD Y POTENCIA (Q Y A)

$$0 < q < 5$$

$$0 < A \leq 3$$



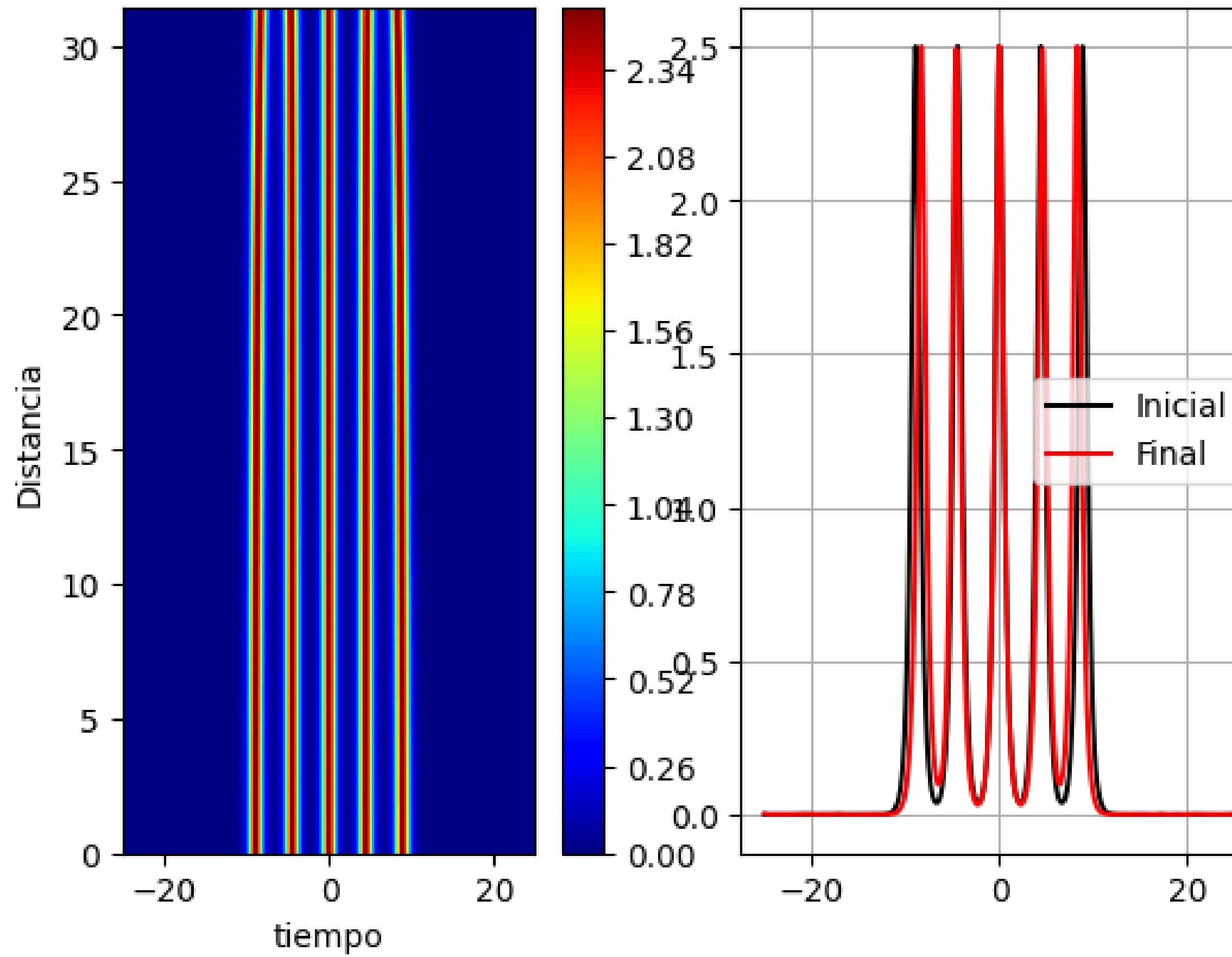
3

AJUSTE DE LA POTENCIA PICO Y DEL COEFICIENTE NO LINEAL.

SI.CORP(2023)

TELECOM VALUE ADDED SERVICE





$$U^2 \approx 3.473 \text{ mW}$$

$$B \approx 22.471910 \frac{\text{Gb}}{\text{s}}$$

$$A = 2.5$$

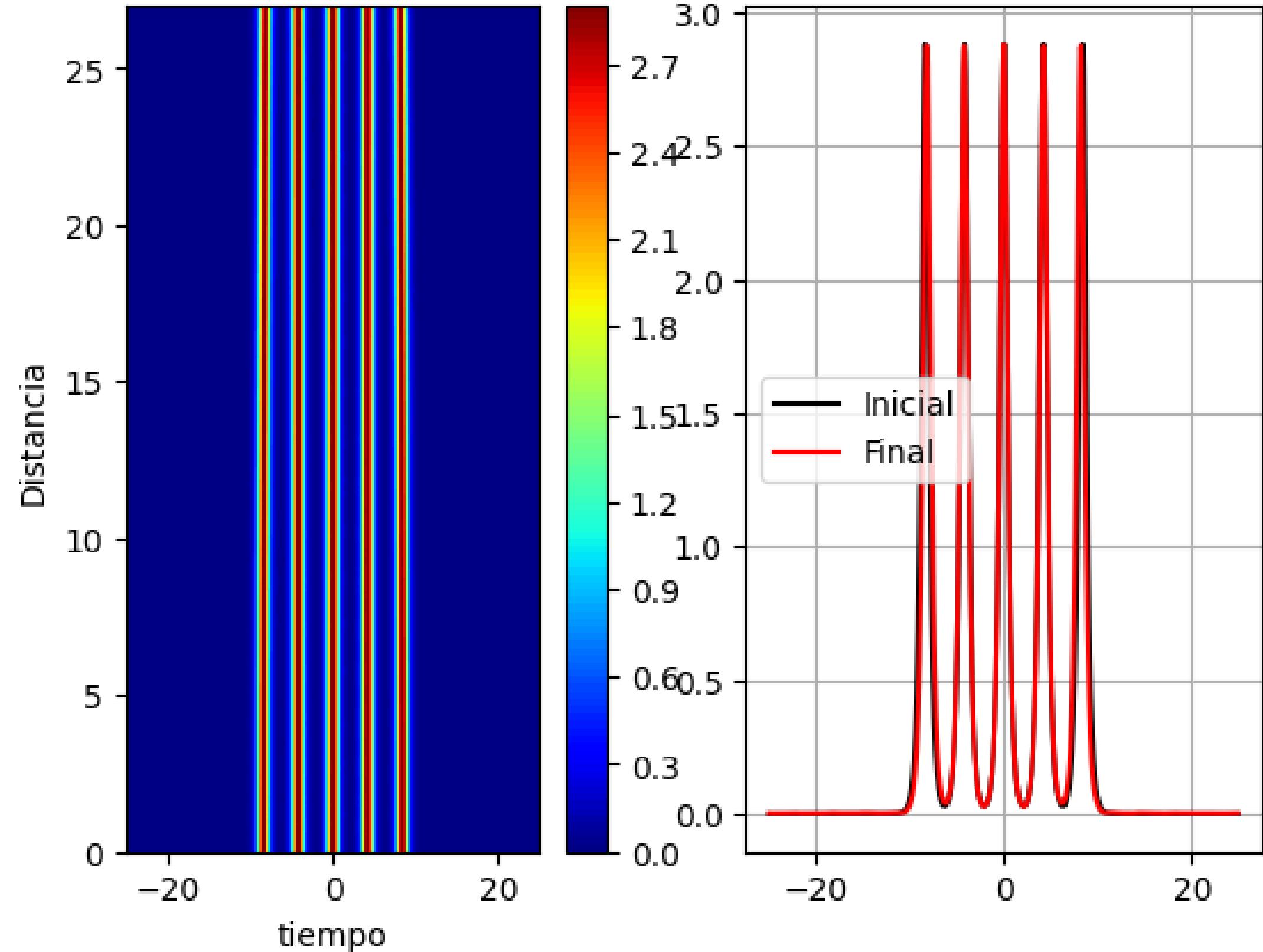
$$q = 4.45$$

$$U^2 \approx 4.608 \text{ mW}$$

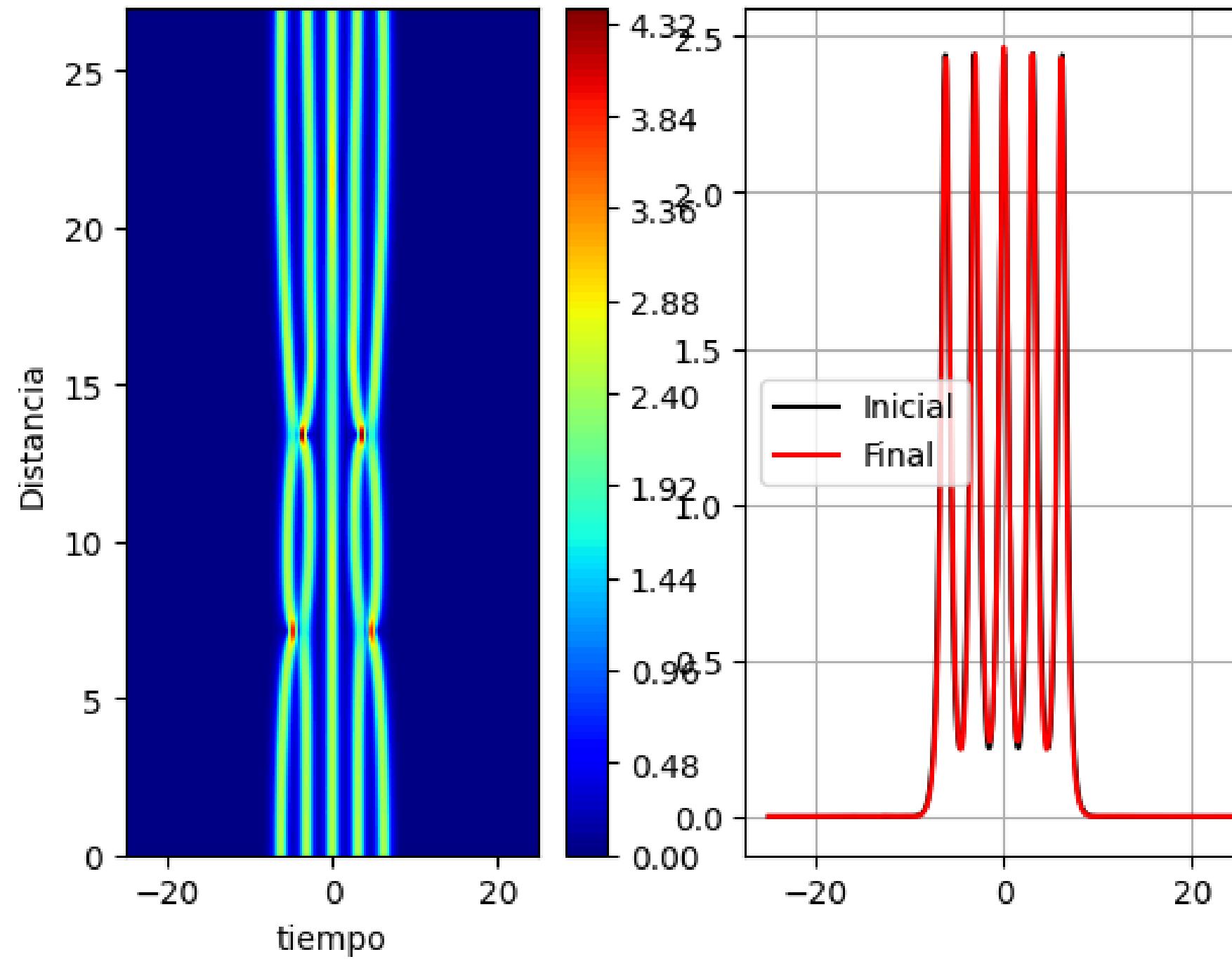
$$B \approx 23.80952 \frac{\text{Gb}}{\text{s}}$$

$$A = 2.88$$

$$q = 4.2$$



Propagacion independiente de los puntos a medir



$$U^2 \approx 3.308 \text{ mW}$$

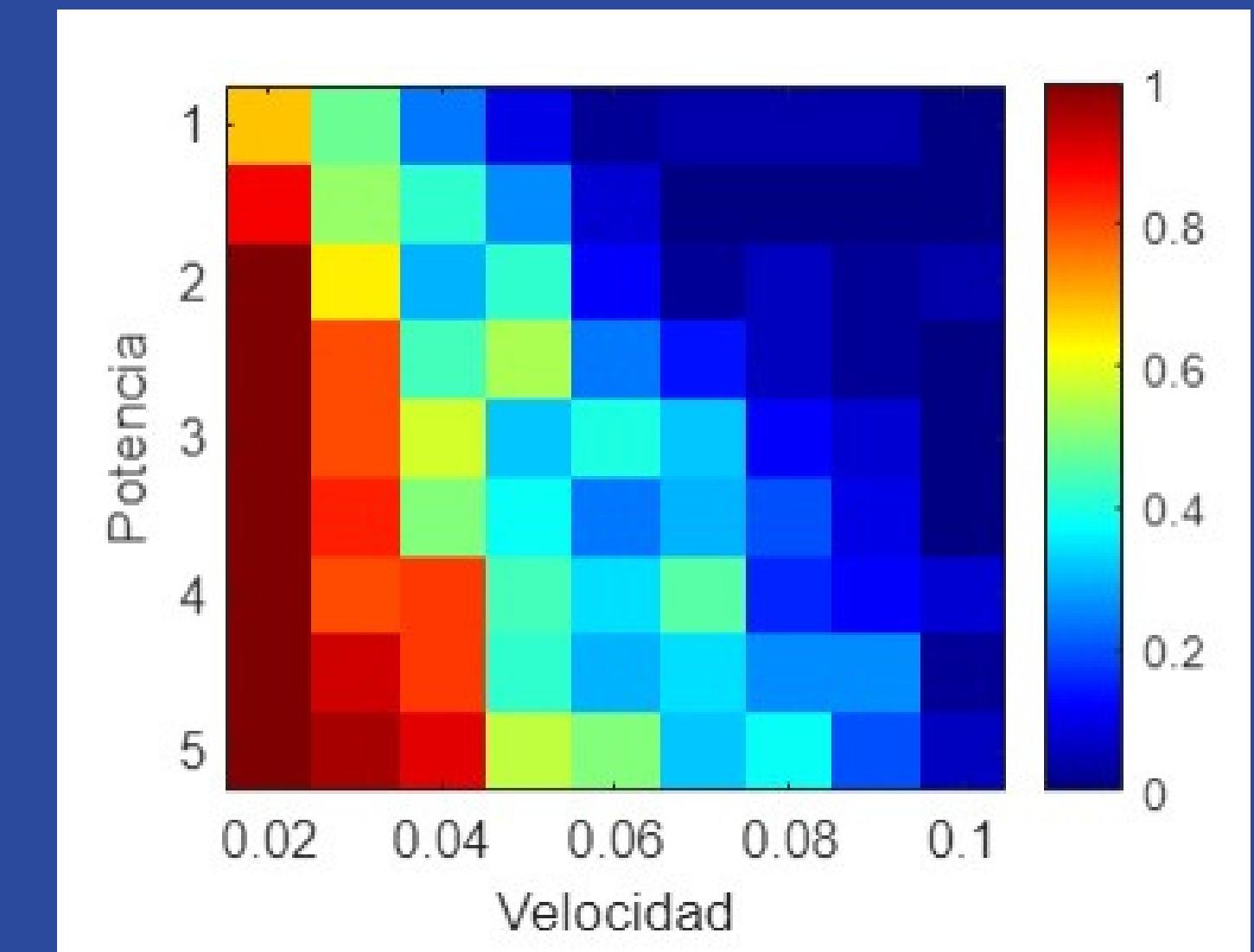
$$B \approx 32.154 \frac{\text{Gb}}{\text{s}}$$

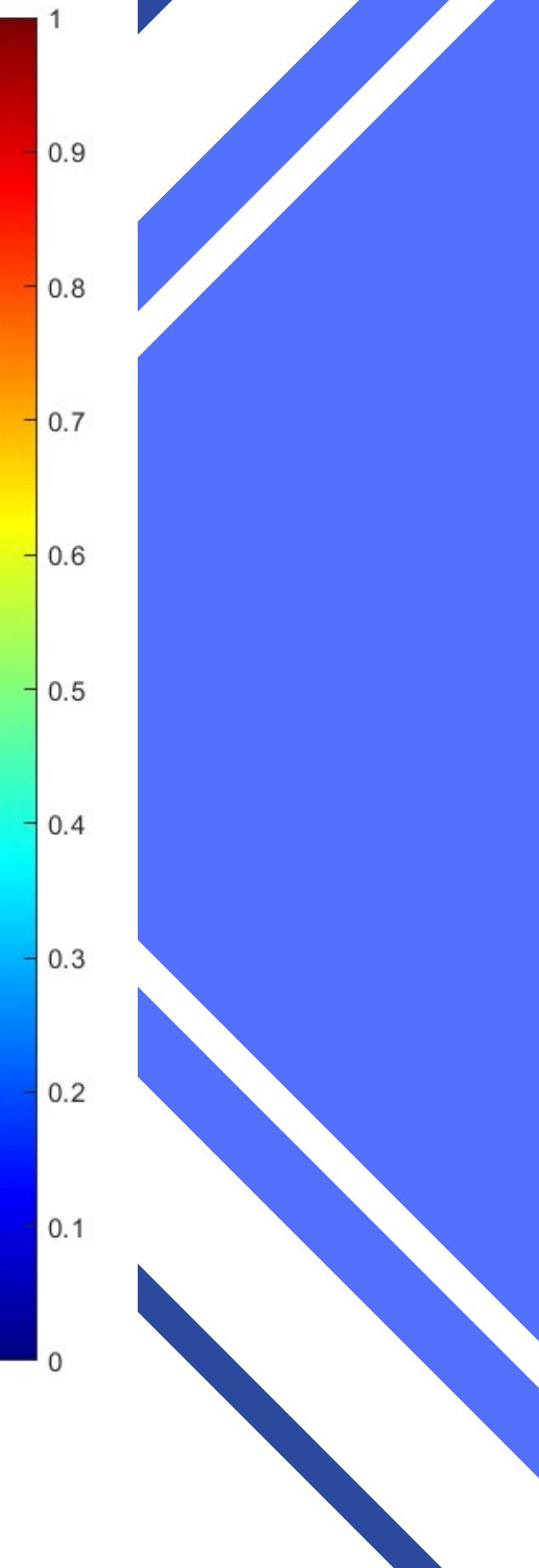
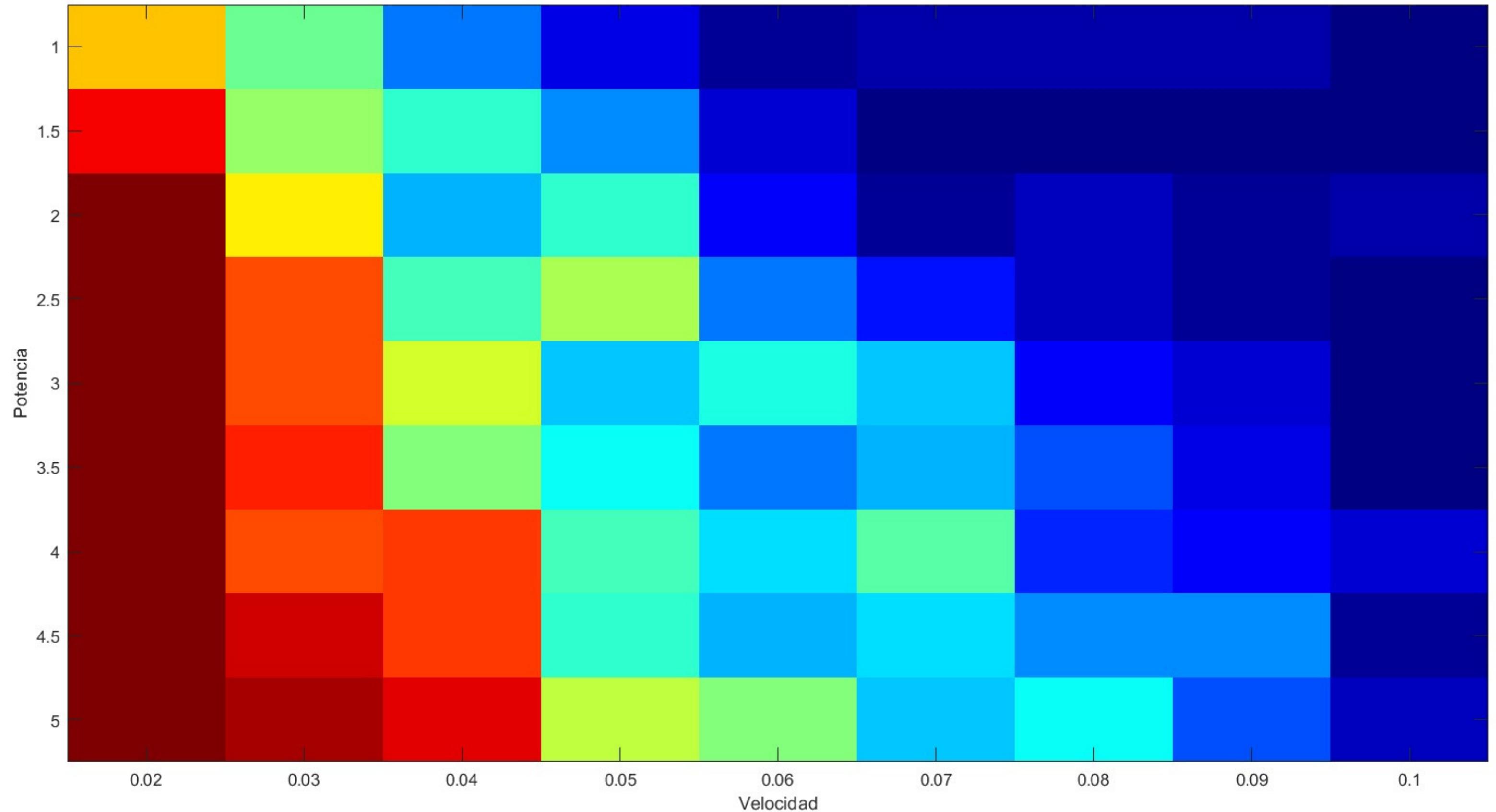
$$A = 2.44 ; q = 3.11$$

4

MATRICES DE OPTIMIZACION

SIMULACION DE LOS PULSOS





Potencia mW

1

2

3

4

5

0.02

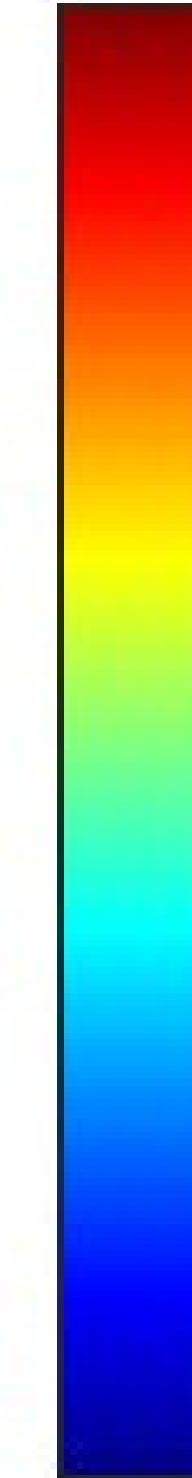
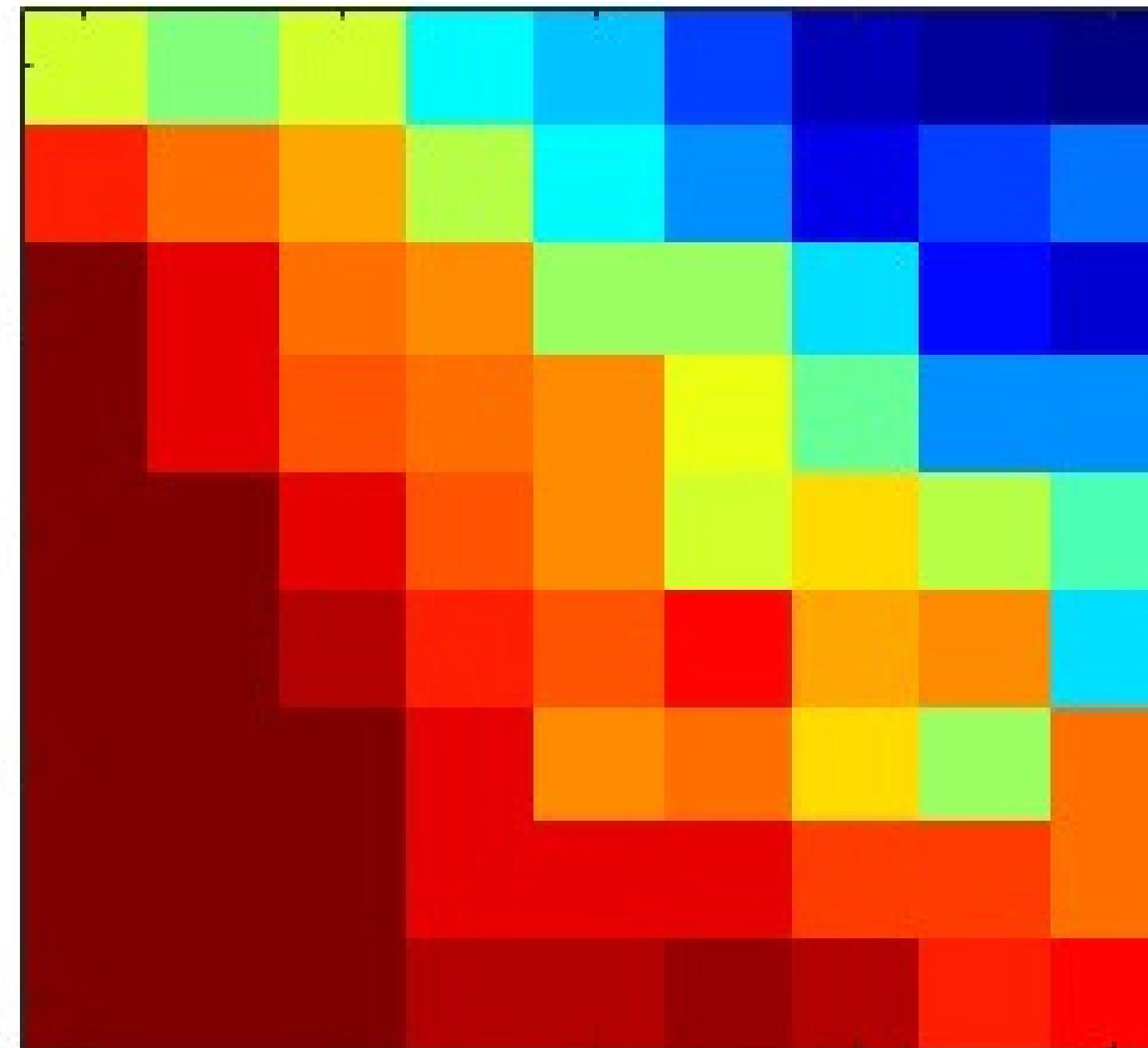
0.025

0.03

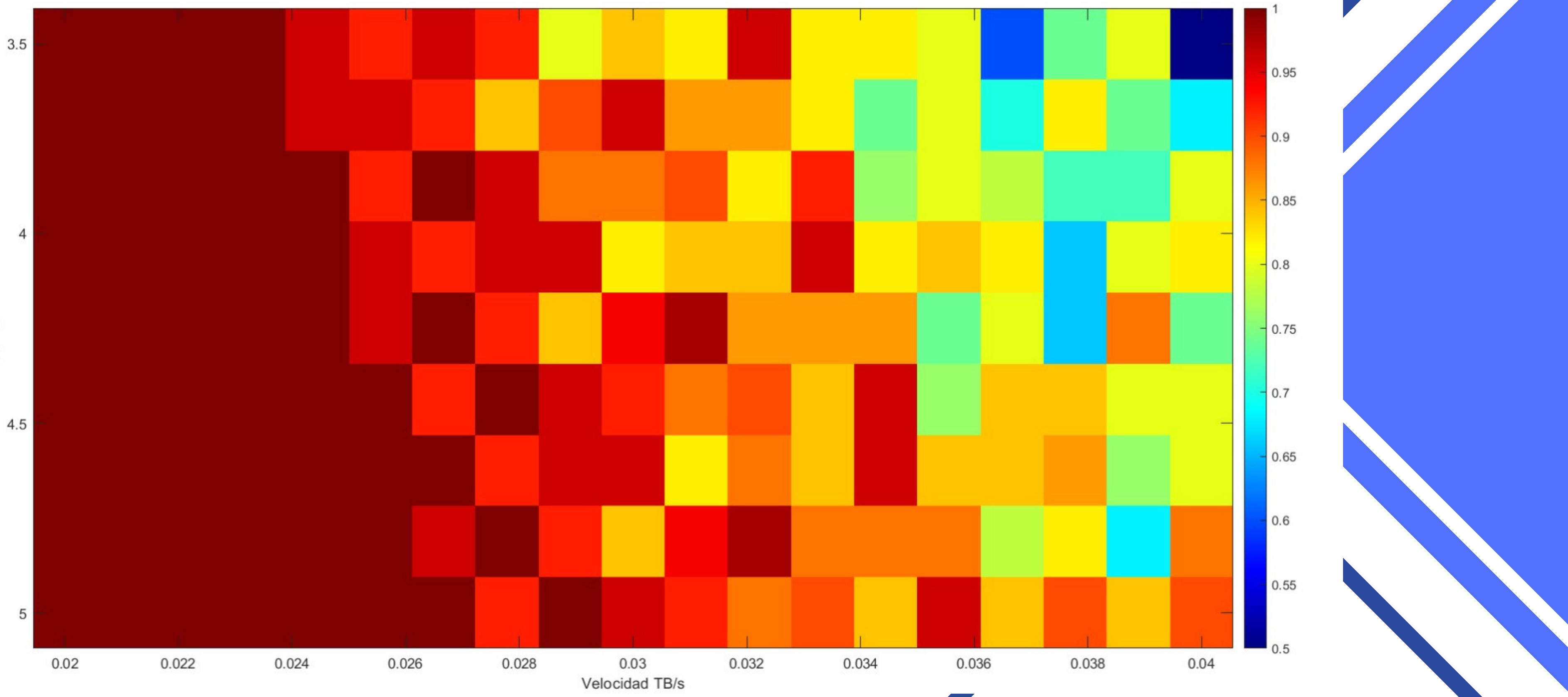
0.035

0.04

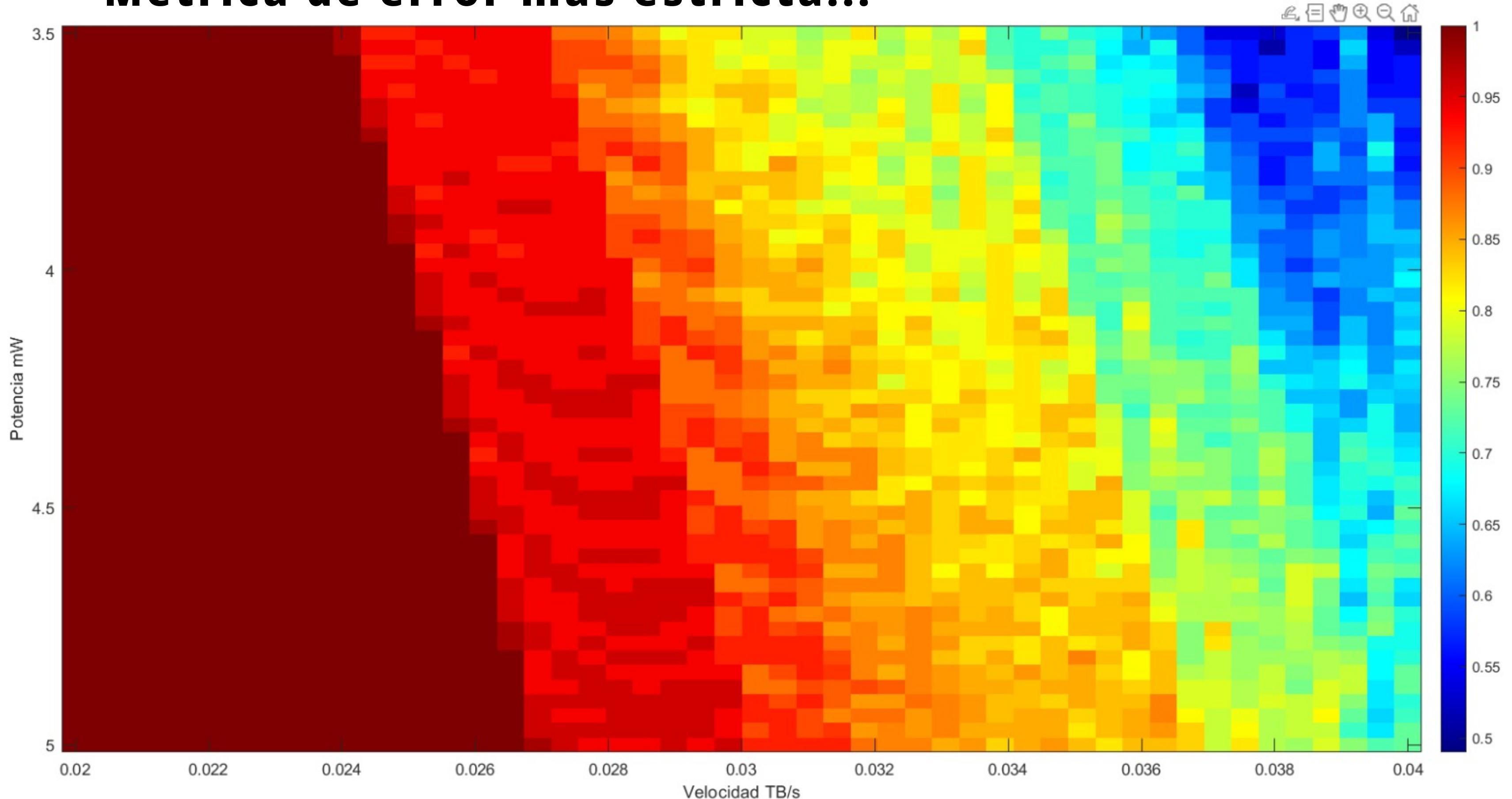
Velocidad TB/s



0.9
0.8
0.7
0.6
0.5
0.4
0.3

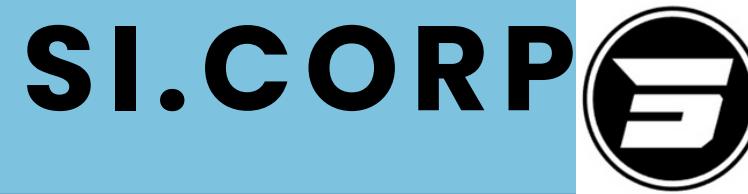


Metrica de error más estricta!!!

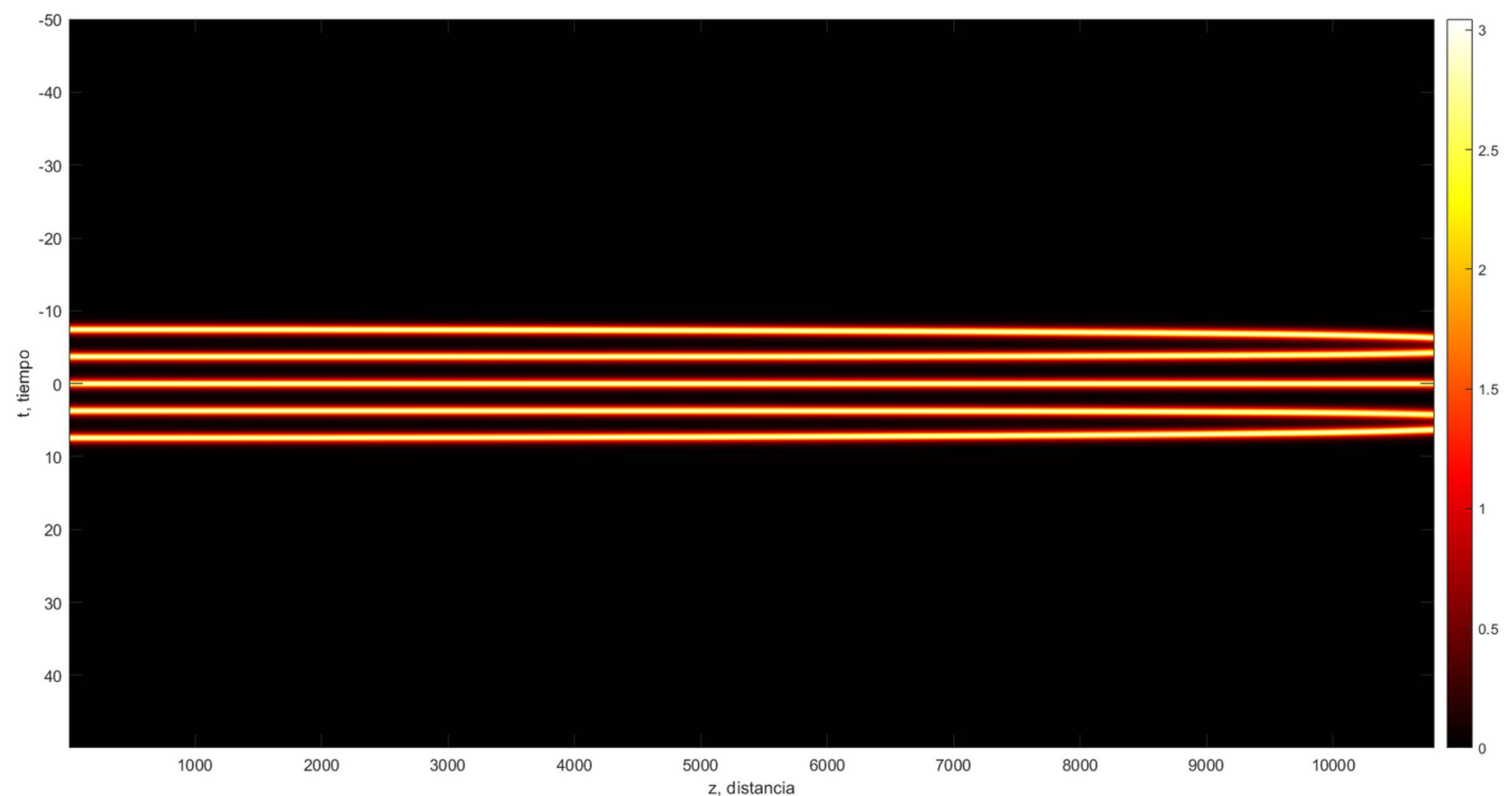




Paquetes



**PULSOS
"PERFECTO"**



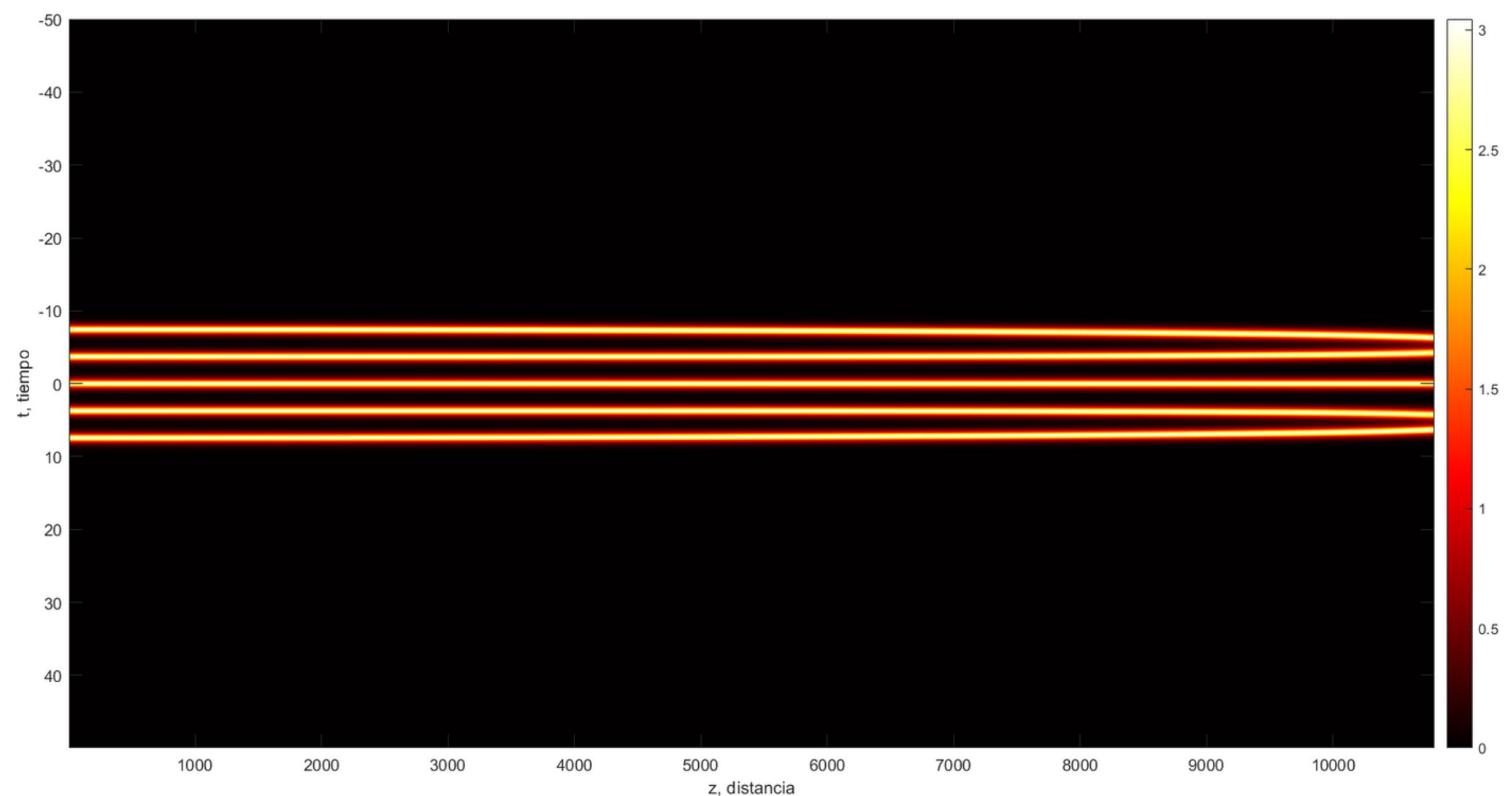
Avanzado

Potencia max = 5 mW
B = 26.9 Gb/s

60,000\$

SI.CORP





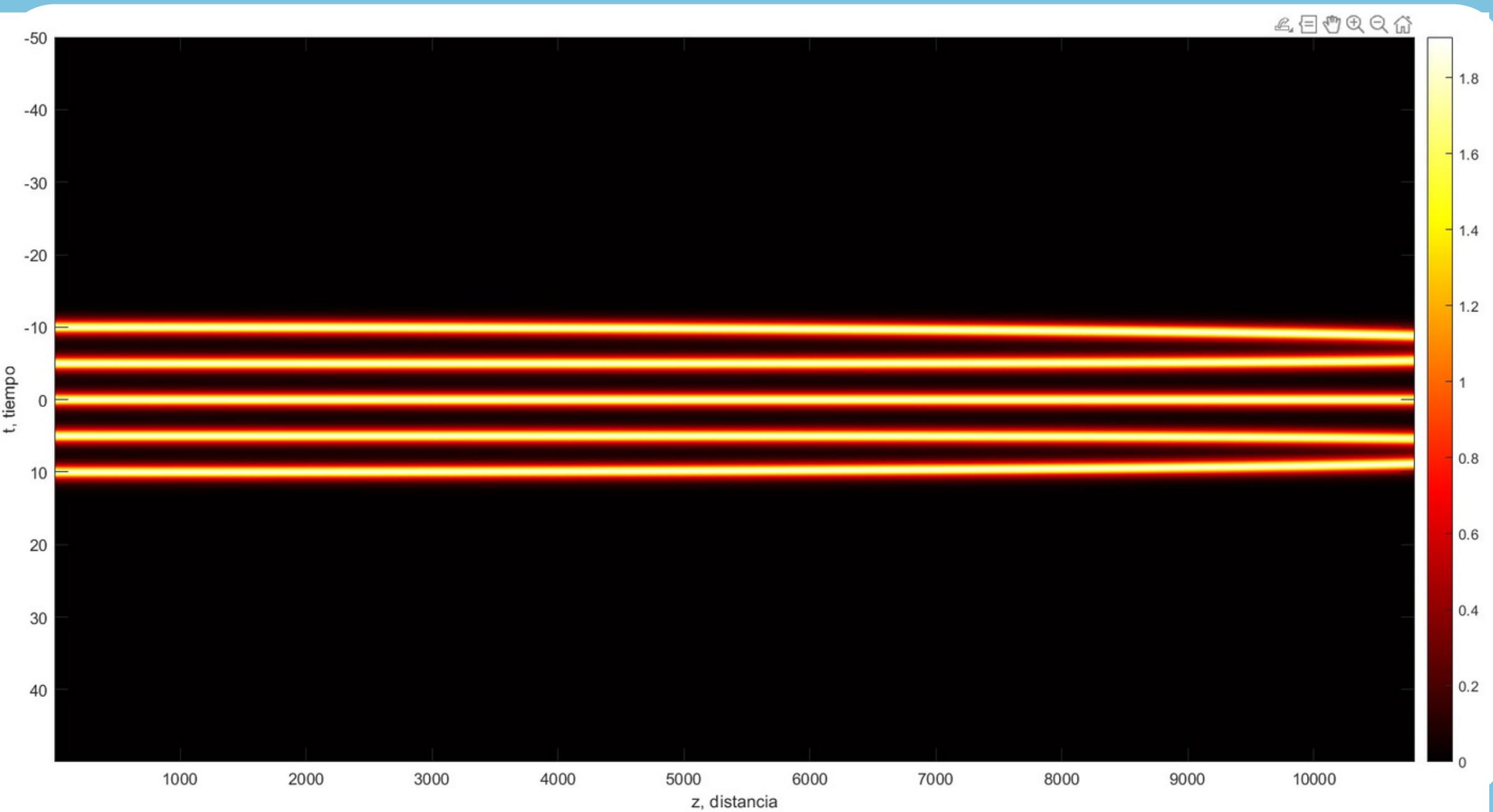
Intermedio

Potencia max = 4.8163 mW
B = 26.5 Gb/s

50,000\$

SI.CORP





Básico

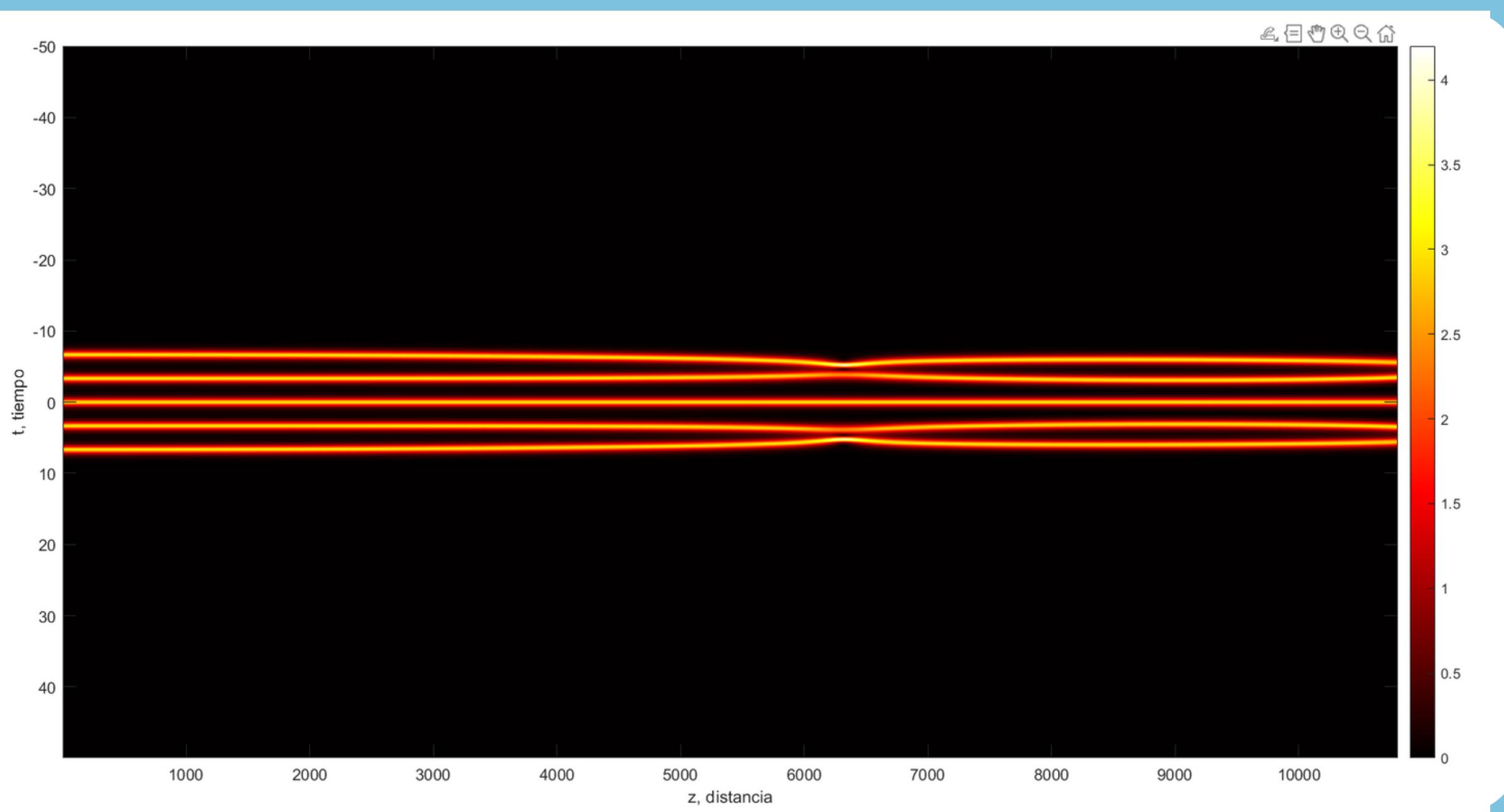
Potencia max = 2 mW
B = 20 Gb/s

40,000\$

SI.CORP



**PULSOS
"SEMI-
PERFECTOS"**



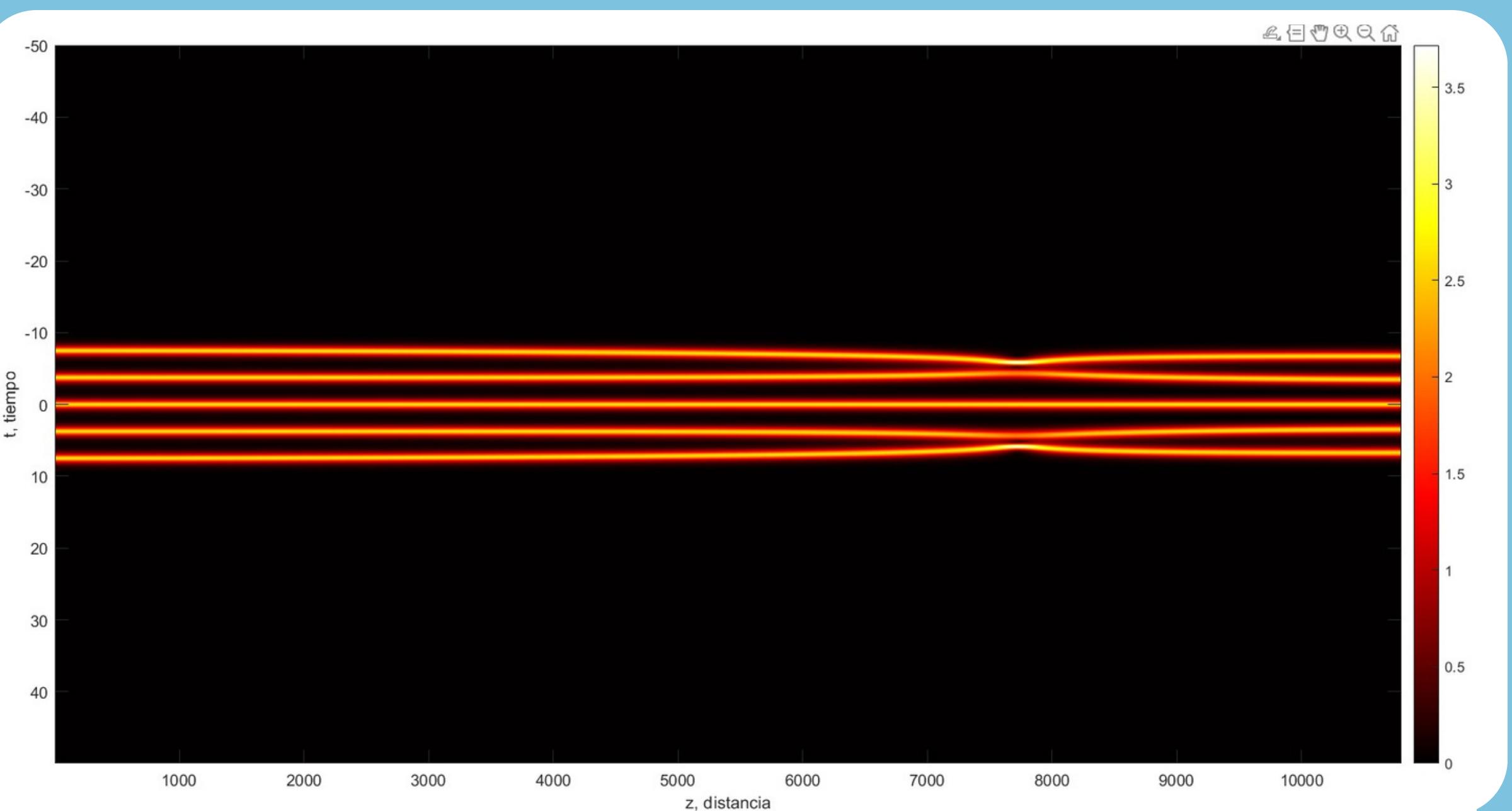
Avanzado

Potencia max = 5 mW
B = 30 Gb/s

50,000\$

SI.CORP





Intermedio

Potencia max = 3.87 mW
B = 26.7 Gb/s

35,000\$

SI.CORP



CONTACTO



123-456-7890



contanto@sicorp.com



www.sicorp.com



Monterrey-Guadalajara-Coahuila-
Michoacan



