SLIM

Forward Problem

Given initial pressure distribution calculate pressure at receivers:

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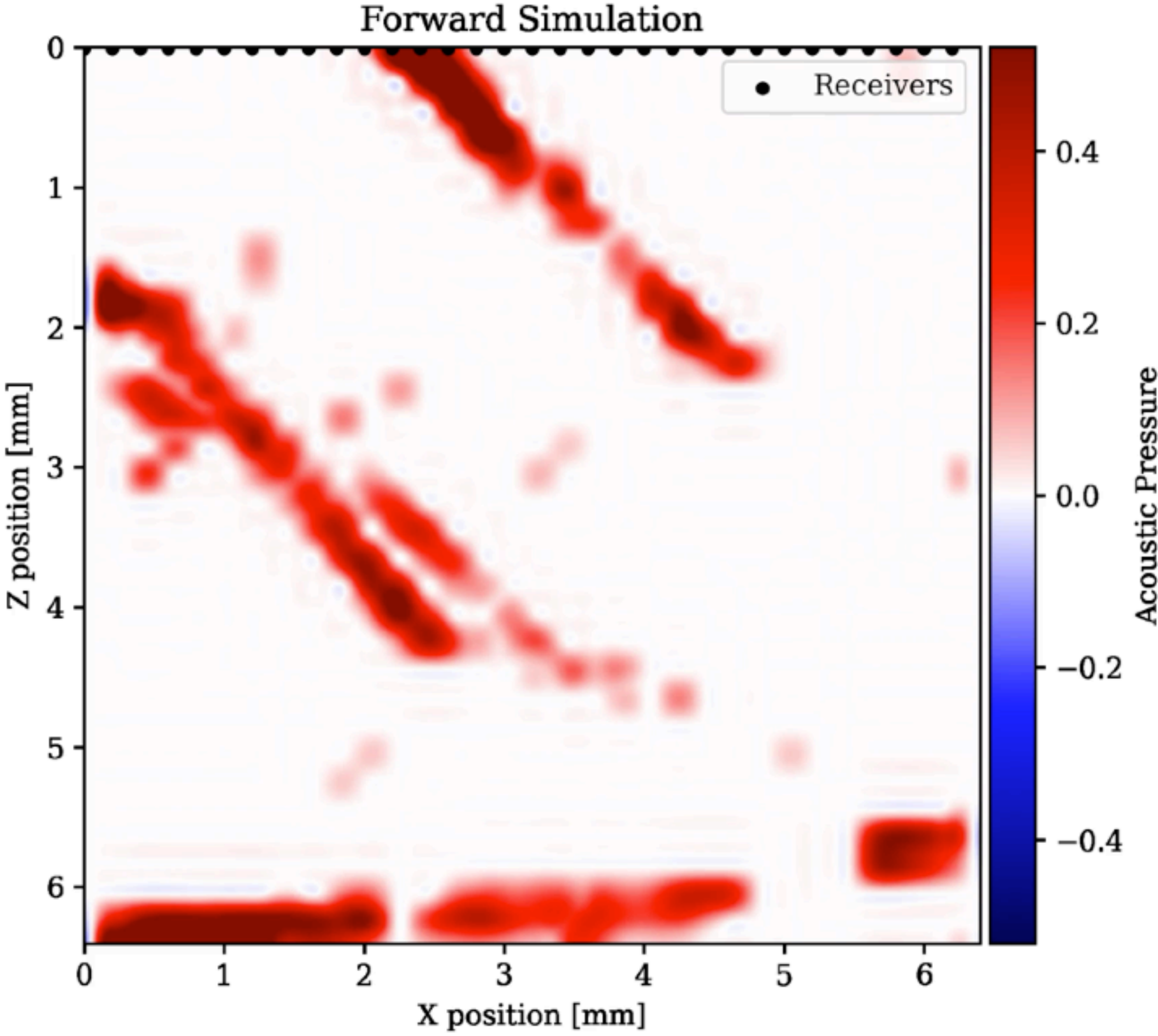
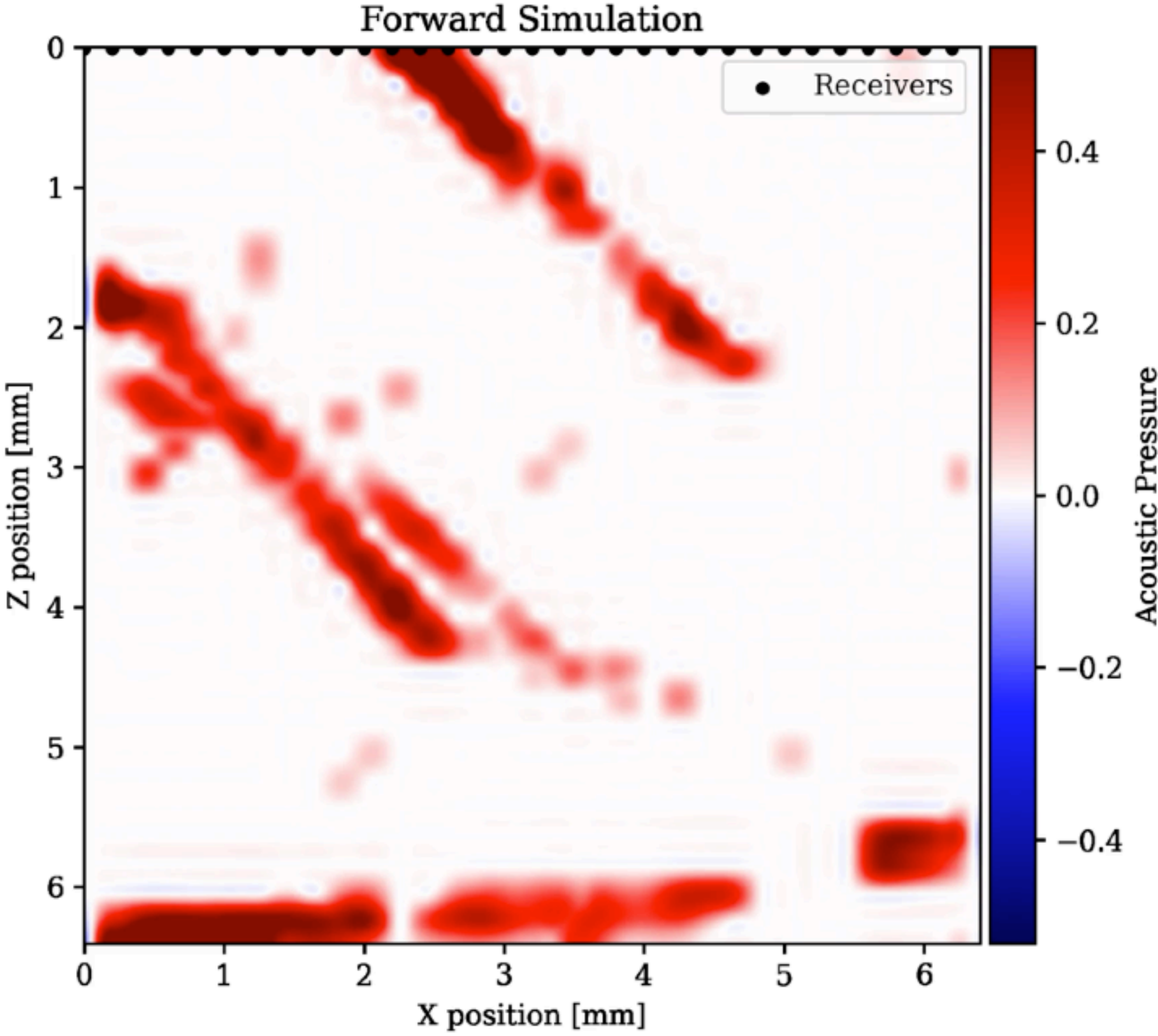
$$u(x,0) = p_0(x)$$

$$\frac{\partial}{\partial t} u(x,0) = 0$$

$$\frac{1}{c_0^2}\frac{\partial^2}{\partial t^2}u(x,t) - \Delta u(x,t) = 0$$


Forward Simulation
Receivers
Z position [mm]
X position [mm]
Acoustic Pressure
0
1
2
3
4
5
6
0.4
0.2
0.0
−0.2
−0.4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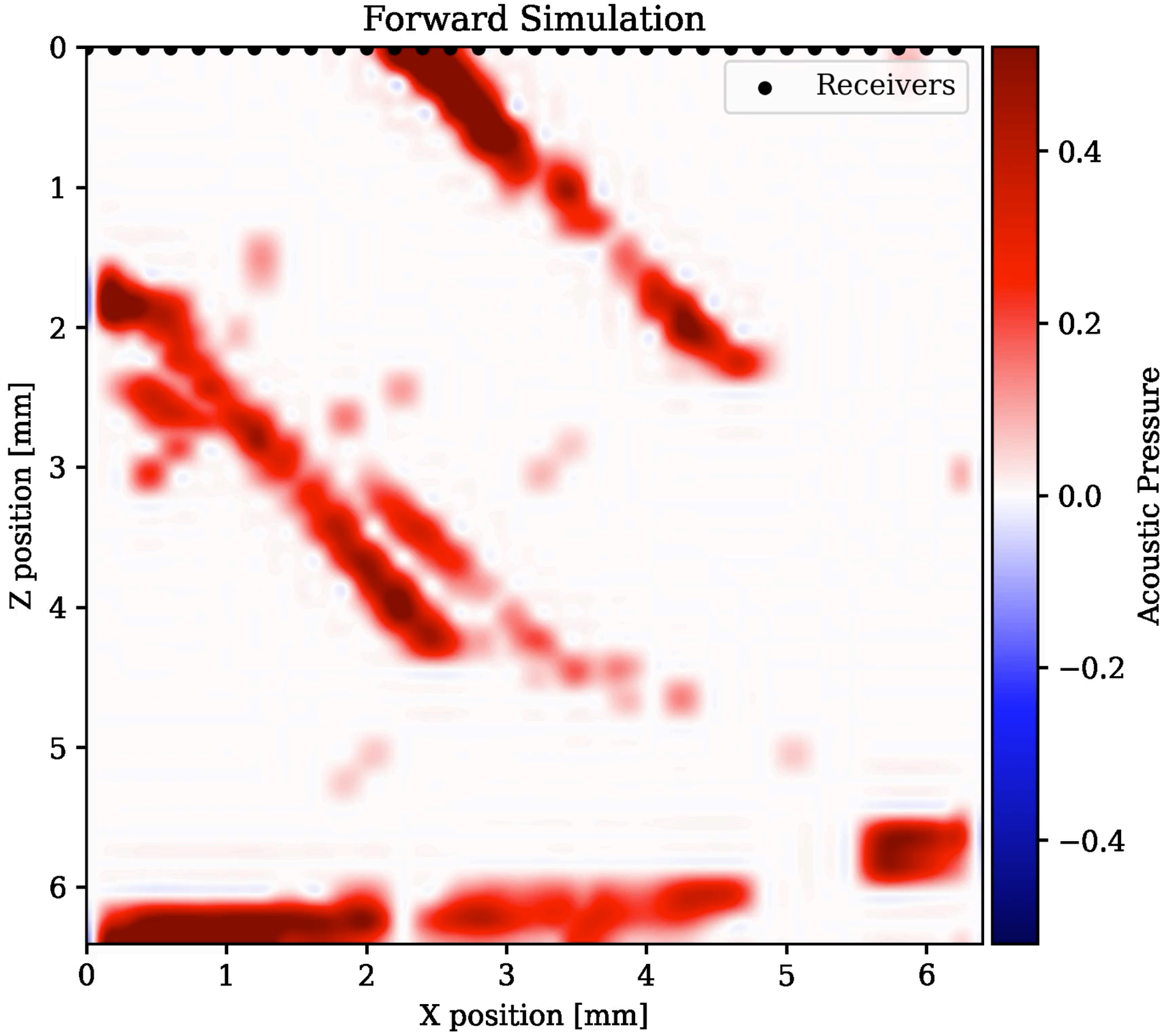
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Receivers
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X position [mm]
Acoustic Pressure
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Forward Problem

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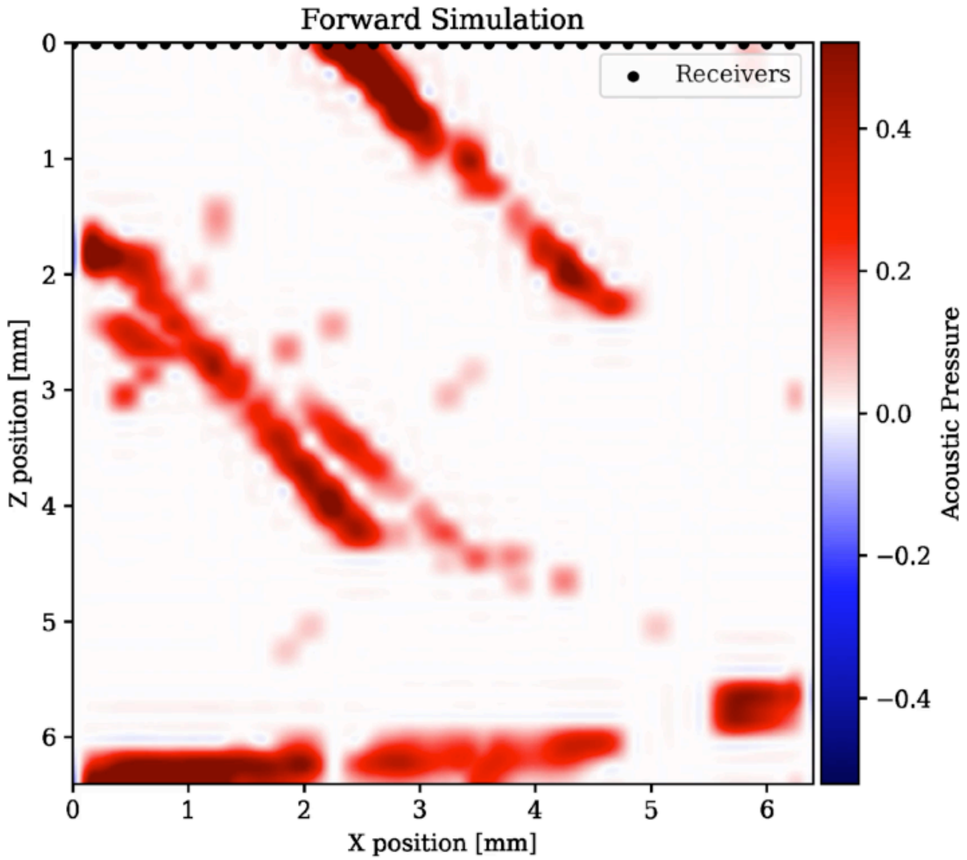
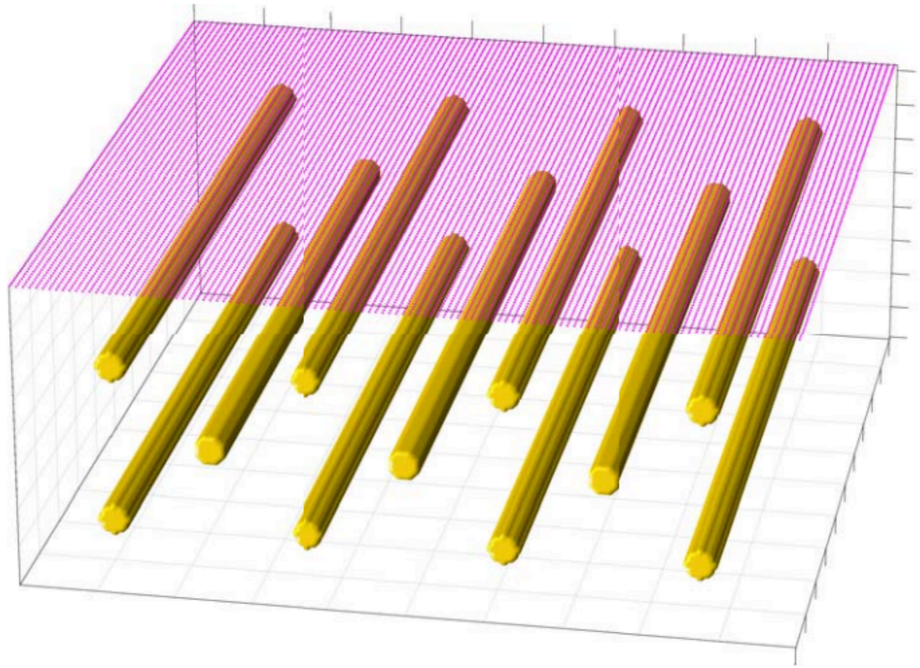


Limited-View Receiver Geometry

Geometry of human tissue entails limited-view

- planar array for 3D
- linear array for 2D



Jathoul, Amit P., et al. "Deep in vivo photoacoustic imaging of mammalian tissues using a tyrosinase-based genetic reporter." Nature Photonics 9.4 (2015): 239-246.