

生醫工程實驗, *Spring 2017*
Lab3 超音波醫學影像分析 (Ultrasound)

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1 Point Spread Function(PSF)

1.1 實驗原理

點擴散函數 (point spread function, 簡稱 PSF)。是描述光學系統對點源解析能力的函數。因點源在經過任何光學系統後都會由於衍射而形成一個擴大的像點。通過測量系統的點擴展函數, 能更準確地提取圖像信息。而 PSF 與 impulse response 有相同的概念。

1.2 實驗數據

a) Estimate PSF size for In-focused and Out-focused targets

以下用 5.7cm, 7.1cm 深度、pen/res 模式來測量

b) Repeat (a) under different B-mode gain

- 5.7cm/high gain/pen

Row	Lateral	Axial
In Focus	5.33333333333333	3.4125
Out Focus	6.39285714285715	3.70196078431373

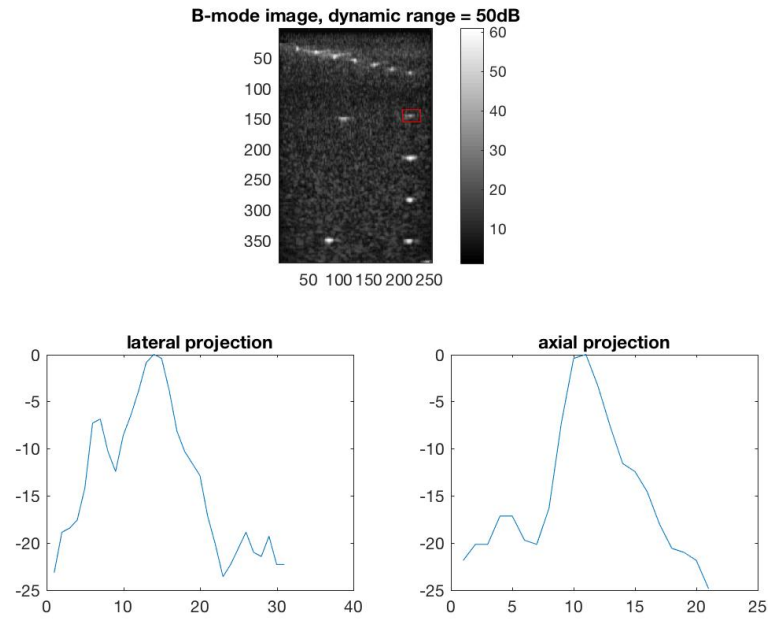


Figure 1: 57-high-pen(In Focus)

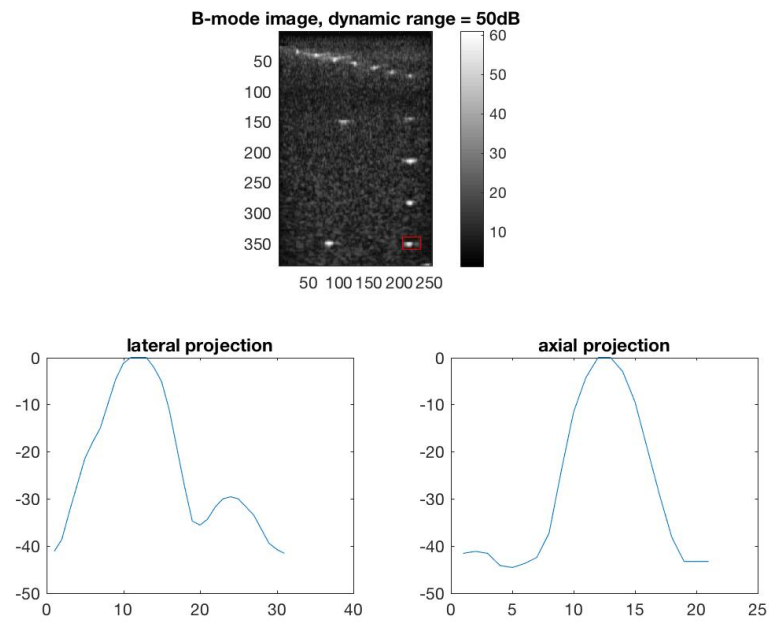


Figure 2: 57-high-pen(Out Focus)

- 5.7cm/high gain/res

Row	Lateral	Axial
In Focus	4.53560606060606	2.22025641025641
Out Focus	6.53194444444444	2.55023148148148