

**Principles of Biomedical Ultrasound and  
Photoacoustics  
hw03: Photoacoustic Depth Profiling and SO<sub>2</sub>  
Measurement**

Due on Tuesday, Dec 12, 2017

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## 1 Part I

### 1.1 Repeat Fig.1 in reference paper

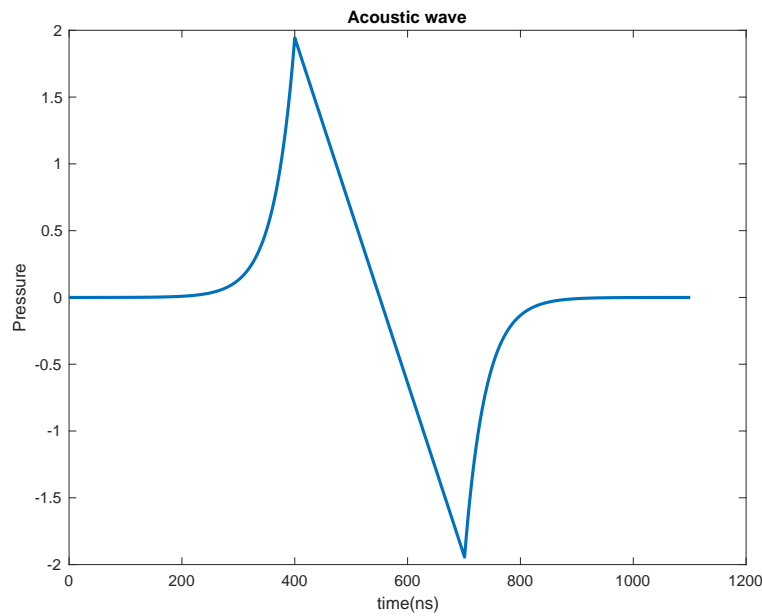


Figure 1: Acoustic Wave

### 1.2 Repeat Fig.2 in reference paper

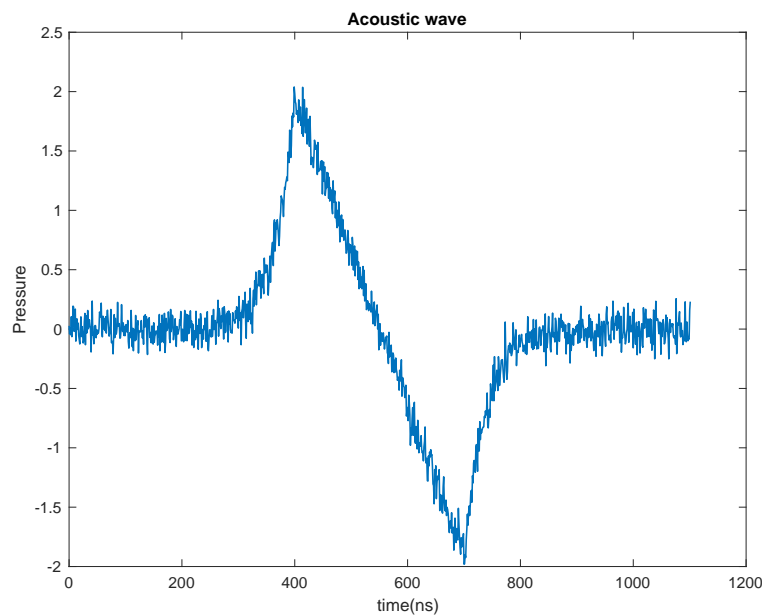


Figure 2: Acoustic Wave with noise

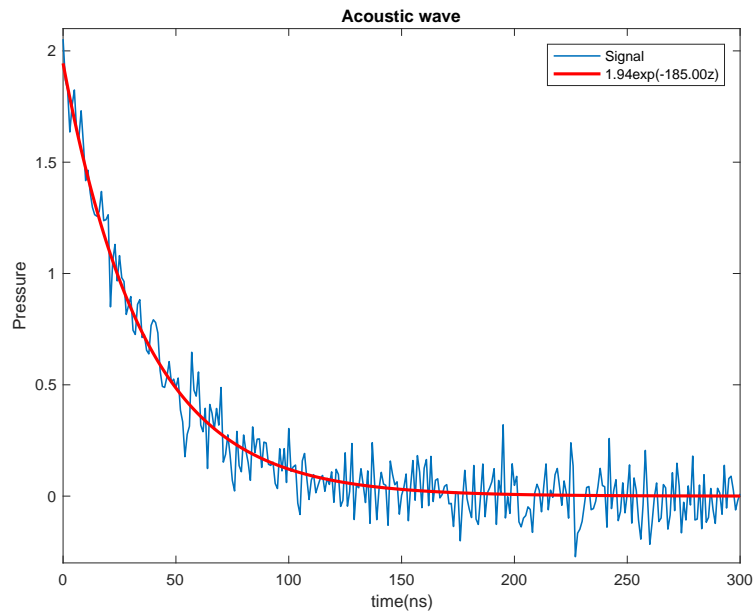


Figure 3: Acoustic Wave with noise

### 1.3 Curve fitting for absorbtion coefficient

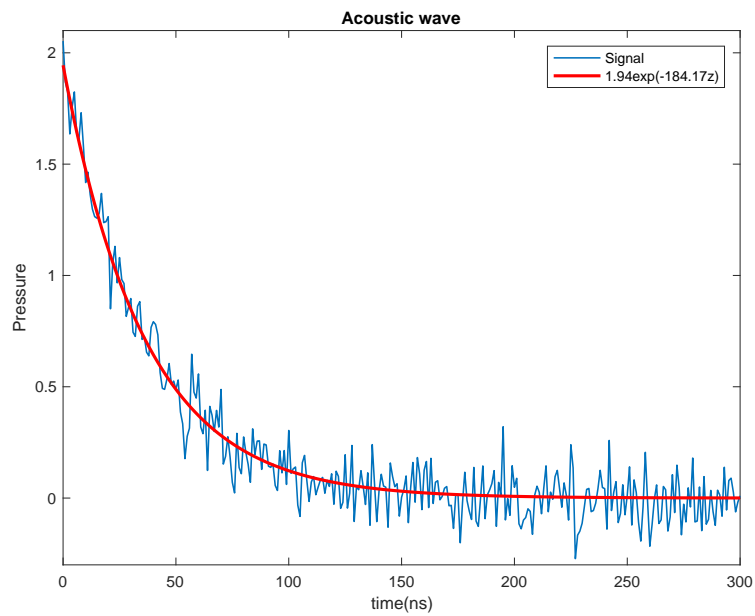


Figure 4: Curve fitting for absorbtion coefficient

## 1.4 Peak value vs absorbtion coefficient

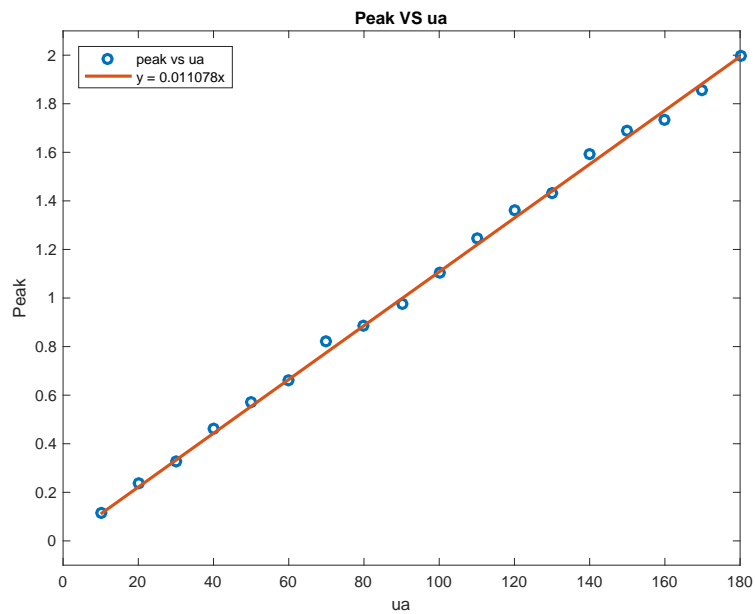


Figure 5: peak vs absorbtion coefficient

## 1.5 $\mu_a$ (estimated) vs $\mu_a$ (real)

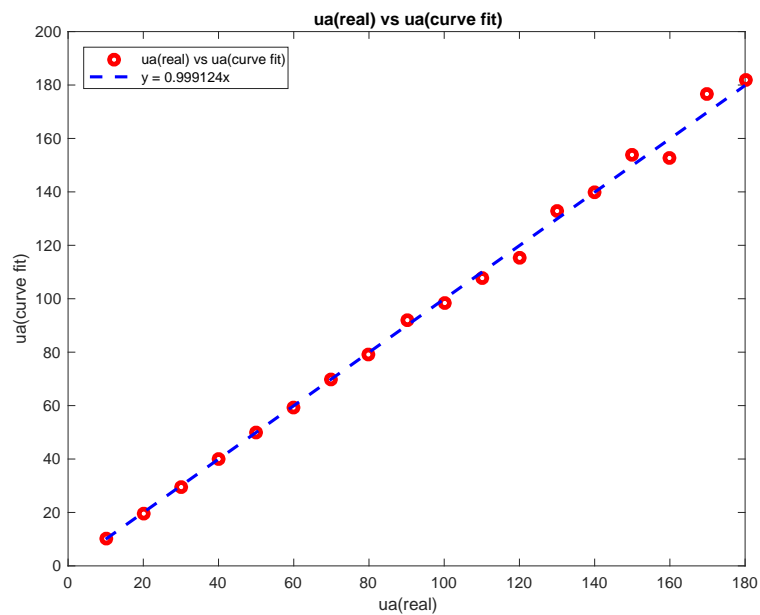


Figure 6:  $\mu_a$  (estimated) vs  $\mu_a$  (real)

## 1.6 Repeat 4 and 5 with transducer impulse response

### 1.6.1 Peak value vs absorbtion coefficient

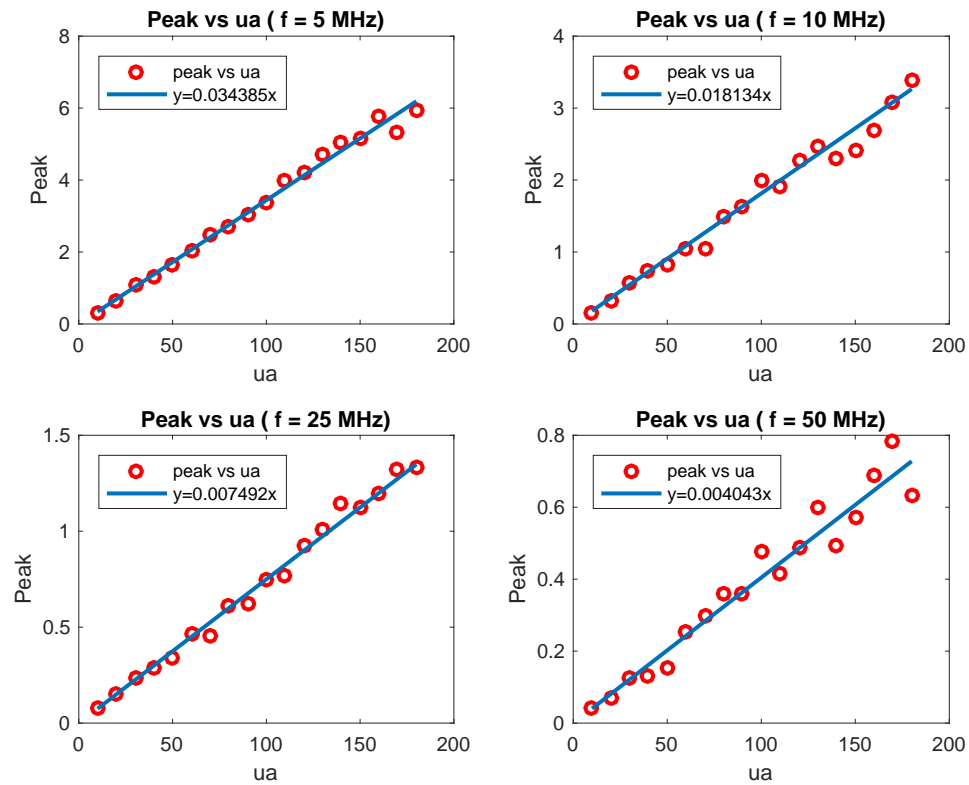
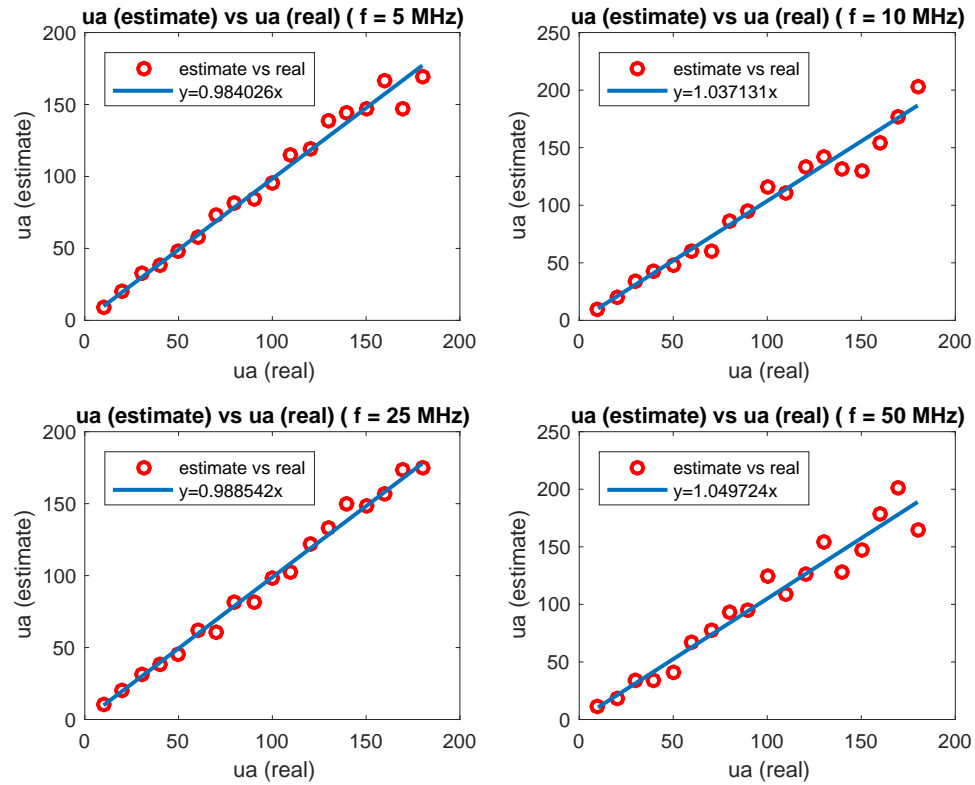


Figure 7: Peak value vs absorbtion coefficient

1.6.2  $\mu_a$  (estimated) vs  $\mu_a$  (real)Figure 8:  $\mu_a$  (estimated) vs  $\mu_a$  (real)