

Lab 9

Team - Helios

①

② As the value of N increases the width of the main lobe is decreasing

③ The phase oscillates between $[-\pi, \pi]$ and as the magnitude plot is symmetric we ~~also~~ can observe that the phase is linear which can also be observed from its plots

④

| | | | |
|-------------|-----------------------|---------|---------|
| $L=51$ | Width (in samples) | in freq | |
| Rectangular | 17 | 0.21 | rad/sec |
| Bartlett | 38 | 0.47 | rad/sec |
| Hamming | 39 | 0.49 | rad/sec |
| Hann | 40 | 0.50 | rad/sec |
| Blackman | 58 | 0.72 | rad/sec |

The values are very close to the values in the book

(c) We notice that the difference in the heights of peaks ~~of~~ is nearly the same for all N (i.e. $N = 51, 75, 101$)

| N | Difference in heights of peaks |
|-----|--------------------------------|
| 51 | 13.85 |
| 75 | 13.69 |
| 101 | 13.3 |