

F-K Domain Analysis (3A)

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2D FT seismic example (1)

24 receivers each with 25m spacing

Time shift 15 ms/trace

Seismogram total length 1sec

Sampling period 0.001 sec $f_s = 1000 \text{ samples/sec}$

Narrow band signal's frequency 12 Hz

Phase Velocity?

$$15 \text{ ms/trace} * 23 \text{ trace} = 345 \text{ ms} = 0.345 \text{ sec}$$

$$12 \text{ Hz} \Rightarrow 12 \text{ cycles / sec} * 0.345 \text{ s} = 4.14 \text{ cycles}$$

$$25\text{m spacing} \Rightarrow 25\text{m} * 23 = 575 \text{ m} = 0.575 \text{ km}$$

$$\frac{1}{\lambda} = \frac{4.14 \text{ cycles}}{0.575 \text{ km}}$$

$$k = \frac{2\pi}{\lambda}$$

2D FT seismic example (2)

24 receivers each with 25m spacing

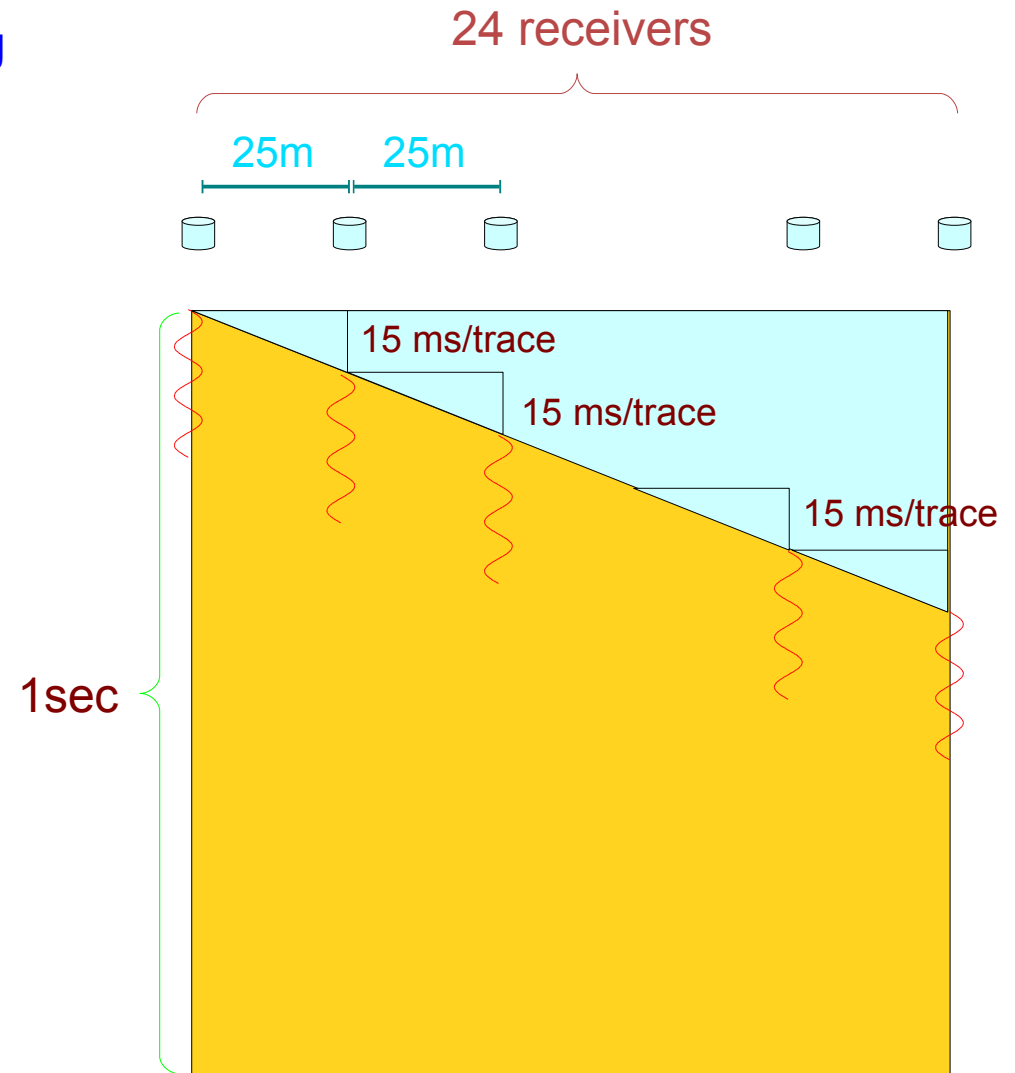
Time Shift 15 ms/trace

Seismogram Total Length 1sec

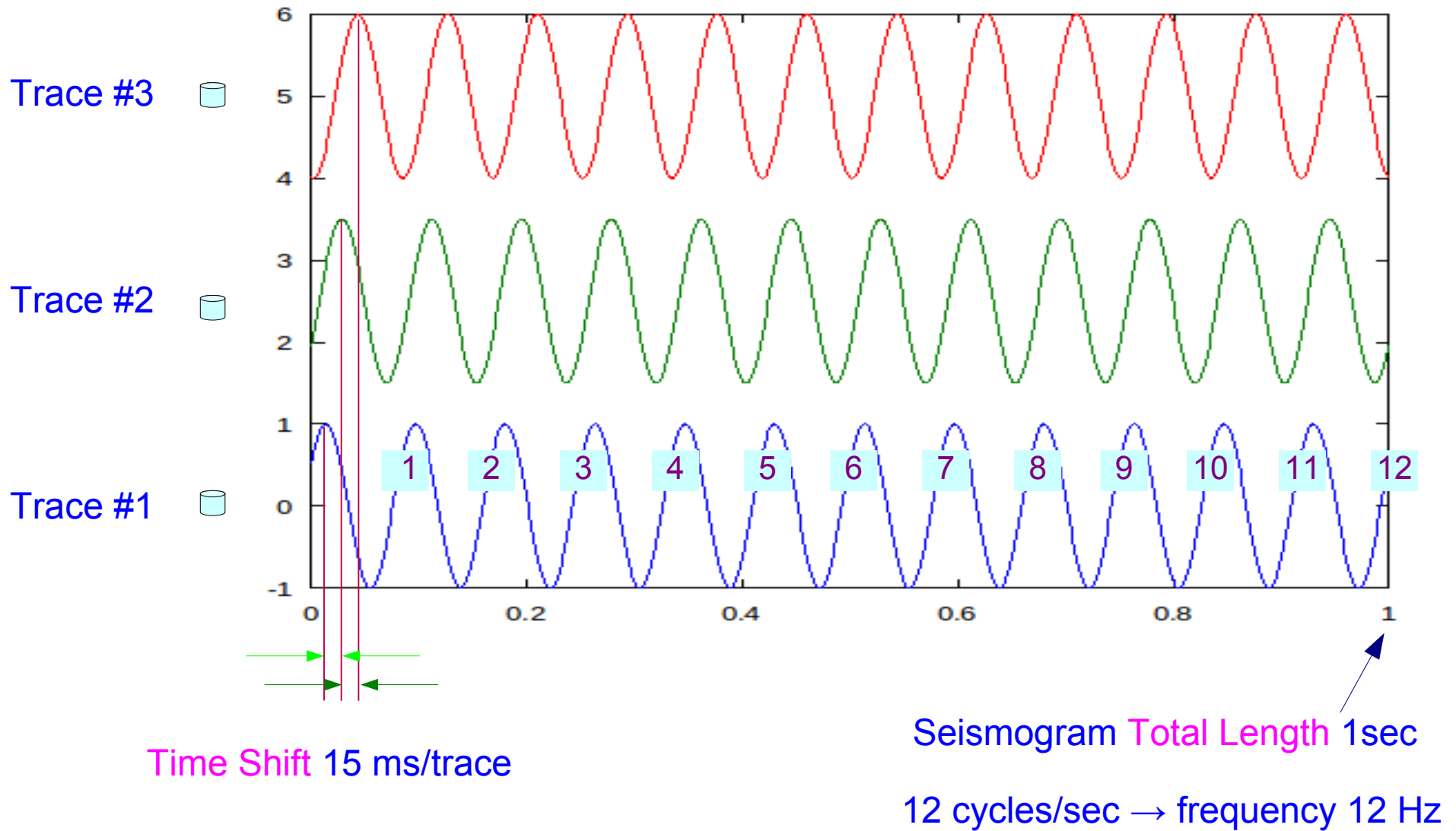
Sampling period 0.001 sec

$$f_s = 1000 \text{ samples/sec}$$

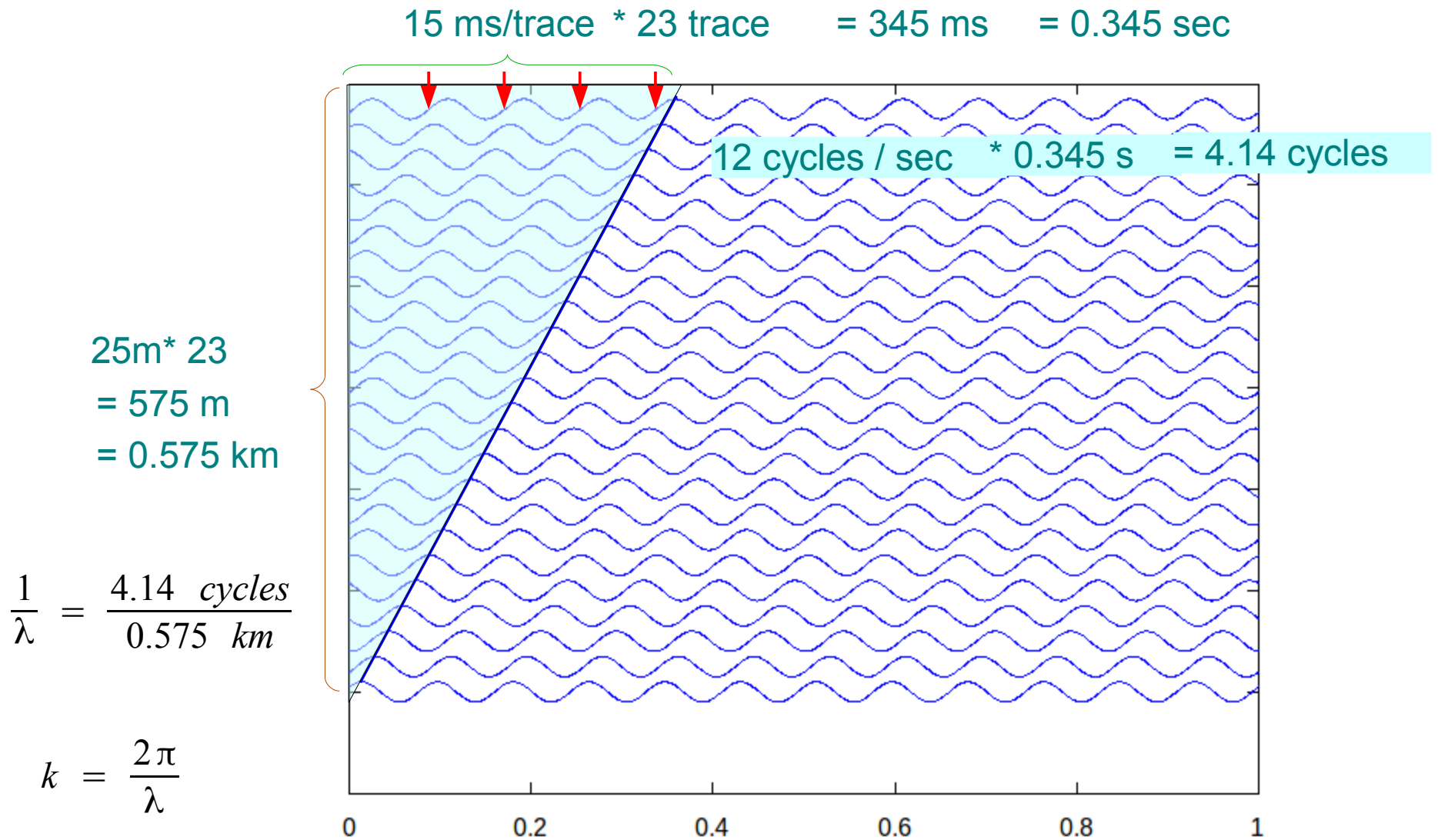
Narrow band signal's frequency 12 Hz



2D FT seismic example (3)



2D FT seismic example (4)



References

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- [6] <http://www.ualberta.ca/~ygu/courses/geoph426/>