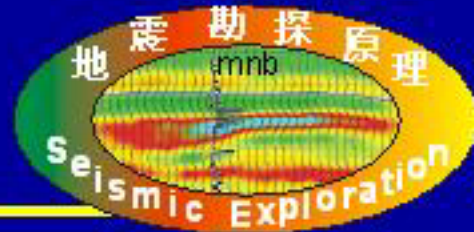


地震勘探原理 双语教学材料



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Exercise 18

Calculate the following convolution $x_k = g_k * f_k$
With $g = 0, 1, 0, 3, 4, 5$
and $f = 1, 4, 4, 2$

Exercise 19

Calculate the autocorrelation ϕ_{xx} for the following function:

$$X_k = 1, 0, 2, 0, 1, 2, 1, 0, 0, 1, 2, 1$$

With a shift from -5 till +5

(without normalisation)

Exercise 20

A X^2-T^2 survey gives the following stacking velocity results:

Layer i	Two-way traveltime from the surface to the base of the layer t_i (s)	Stacking velocity: V_s (km/s)
1	1.100	2.18
2	1.786	2.80
3	1.935	3.20
4	2.250	3.64

Calculate the interval velocities.

Exercise 21

The figure shows a single shot (marine Seismics) with several reflections.

Hydrophone distance 25 m, number of hydrophones 180

Offset for first trace 252m, offset for last trace 4727 m

- Identify the numbered reflections in this dataset (primaries or multiples) and show their travelpath
- Calculate the velocity of the direct wave
- Carry out a velocity analysis with the t^2-x^2 method for the primary reflections
- Construct a velocity model with interval velocities using Dix's formula

