

HW 4, EECS 203A

Problem 4.7

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Question

What is the source of the nearly periodic bright points in the horizontal axis of the spectrum in fig 4.11(b)

Solution

High frequency will show up at places when data exhibits large spatial changes such as an edge or noise. In 2D, a horizontal bright line in the spectrum indicates an edge or some sort of large gray level change in the vertical direction in the image. And vertical bright lines in the spectrum indicate an edge or some sort of large gray level change in the horizontal direction in the image. Periodicity appears in the spectrum when those changes in the image happen at regular spatial intervals.

So, looking at the image, the set vertical lines below the big letter 'a' exhibit large periodic frequency change at regular intervals. Hence these lines are the cause of the periodic bright point in the spectrum.

