

3.12/8

The Fourier Transform of a 1D impulse train denoted by  $\sum_{n=-\infty}^{\infty} \delta(t - nT)$  is given by

$\omega_0 \sum_{n=-\infty}^{\infty} \delta(\omega - n\omega_0)$ , where  $\omega_0 = \frac{2\pi}{T}$ . Using this information, derive an expression for the

2D Fourier Transform of an image made up of a periodic array of strips parallel to the x axis. The thickness of each strip is W, the spacing between each strip is S, and the image is of size AxB, with {A,B} >> {W,S}. Draw a schematic sketch of the spectrum of the image.